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LISTED AND PRESENTED IN FULL TEXT ARE 13 APPENDIXES TO ED 010 314. TOPICS OF THE APPENDIXES ARE (1) A SELECTED BIBLIOGRAPHY--CURRICULUM THEORY AND THE DYNAMICS OF PLANNED CHANGE, (2) INSTRUCTIONAL MODELS, (3) CONFERENCE PAPERS, (4) A LIST OF SEMINAR PARTICIPANTS, (5) STUDIES IN THE RATIONAL PLANNING OF CURRICULUM AND INSTRUCTION--A DESIGN FOR RESEARCH, (6) ROSTER MAP OF CONSULTANT TEAMS, (7) PROFILES OF SCHOOL SYSTEMS, (8) A SAMPLE OF REQUIRED RESEARCH ACTIVITIES, (9) CSI (CENTER FOR THE STUDY OF INSTRUCTION) ANNUAL REPORT, (10) A CONSULTANT TEAM NETWORK, (11) AN OUTLINE OF PROJECTED PUBLICATION, (12) LETTER TO INTERESTED SCHOOLS ABOUT THE CSI PROJECT, AND (13) NEWS RELEASE. (LP)

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FINAL REPORT
Project No. Y-012
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~~APPENDICES~~
~~TO~~
INNOVATION IN PLANNING
SCHOOL CURRICULA--APPENDICES.

August 1966

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APPENDIX A

SELECTED BIBLIOGRAPHY:

CURRICULUM THEORY AND THE DYNAMICS OF PLANNED CHANGE

SELECTED BIBLIOGRAPHY

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APPENDIX B

INSTRUCTIONAL MODELS

INSTRUCTIONAL MODELS

There have been several thousand studies of teacher and/or learner behavior the last three decades. Perhaps fifty have been sufficiently promising to encourage the authors to suggest instructional models and "theories." All instructional models and "theories" grow out of studies of teachers and learners, but this does not insure that the studies were sufficiently adequate to merit this next step. Furthermore, some of the most promising studies have not had enough saliency to be developed into models or "theories" because of the modesty of the investigator or the relative isolation of the institution where the investigator resides.

This cursory report, therefore, will offer examples of instructional models or "theories" that may be useful for the research staff of the consortium as it works with teachers in their attempt to understand and increase learning in the schools within the various sites. Some of the reports are simple descriptions of research studies. A sound research study, however, usually suggests ways of observing and consequently modifying teacher and learner behavior and can have immediate utility at the instructional level.

1. MEASURING CLASSROOM BEHAVIOR--CLASSROOM CLIMATE

The dimension of classroom behavior called classroom climate has been measured more successfully than any other. There are differences in the terms applied to the dimension as it has been operationally defined in various studies--dominative-integrative, teacher-centered versus learner-centered, hostile-supportive, direct-indirect influence. Yet there is little question that all are referring to highly similar, even identical, dimensions of behavior, reliably measurable, and important in educational theory.

There are many schemes for measuring classroom behavior. The most salient and thorough scheme in the area of classroom climate has been developed by Ned Flanders. Its principal characteristics will be described using a system of 10 categories: (1) accepts feeling, (2) praises or encourages, (3) accepts or uses ideas of student, (4) asks questions, (5) lecturing, (6) giving directions, (7) criticizing or justifying authority, (8) student talk-response, (9) student talk-initiation, and (10) silence or confusion. The observer at the end of each three-second period decides which category best represents the "communication behavior" during that three seconds and writes down the number of that category while observing the next three-second period.

When the data are tabulated, those referring to any episode or group of episodes may be entered on a 10 x 10 matrix, each categorization (except the first) being tallied opposite the number of the one just preceding it and below its own number.

Several episodes may be tallied in a single matrix, as for example, all episodes seen in a single classroom might be combined to give a picture of the overall pattern of interaction in the class. Although Flanders denies that the categories lie along a scale of any kind, he does conceptualize them as lying along a dimension of "influence." Categories 1 to 4 represent indirect influence in varying degrees--category 1 allowing the pupil the most freedom; category 4 the least. Categories 5 to 7 represent increasing amounts of direct influence. Categories 8 and 9 represent different levels of teacher influence as inferred from pupil behavior. Category 10 is an escape category for unclassifiable three-second periods.

Flanders' scheme is extremely ingenious. Every one of the 100 cells in the matrix represents a different item of behavior with its own intrinsic interest. Yet the observer needs to learn and use only 10 categories. The idea of categorizing the dominant pattern of a three-second period rather than each statement or other unit of behavior is also ingenious.

2. MEASURING EFFECTIVE TEACHER BEHAVIOR

One direction that research involving systematic observation of classroom behavior can take is toward the identification of patterns of behavior which distinguish effective teachers from ineffective ones.

An observation guide used by Morsh in 1956 follows:

Instructor Verbal Behavior

Gives aims
Defines terms
Explains:
  a. Fact
  b. Training aid

Asks:
    a. Designates student, asks question
    b. Asks question, designates student
    c. Class question

Answers:
    a. Own question
    b. Student question

Repeats:
    a. Student answer
    b. Student question
    c. Pet work

Gives example
Gives directions
Calls student:
    a. By name
    b. Other

Threatens, warns

Instructor Non-Verbal Behavior

Stands:
    a. Behind desk
    b. At board

Moves:
    a. Center, rear
    b. Other

Leans on desk
Smiles
Demonstrates:
    a. Training aid
    b. Gestures
    c. At board

Looks at notes, course outline
Uses board:
    a. Key term
    b. Diagram
    c. Erases

Student Behavior

Raises hand
Talks

Answers:
  a. Recognized

Asks question:
  a. Recognized

Looks around
Doodles
Slumps
Yawns, stretches
Class answers
Sleeps or dozes
Ignores instructor
Smiles

Although the items may appear somewhat trivial by themselves, when a few of them are put together as in the "alertness" scale, it is possible to see a common factor in the items that may not be so trivial. If the six items on the scale are regarded as mere symptoms of some stable characteristic of the class, it becomes clear how items of little intrinsic importance can be used to measure something important--much as a doctor may detect a fatal disease by observing a few individually insignificant symptoms.

3. MEASURING MULTIPLE DIMENSIONS--MEASURING CLASSROOM BEHAVIOR

These are studies which have tried to measure classroom behavior as such, to describe quantitatively as much as possible of what goes on in the classroom, regardless of its relationship to teacher effectiveness of psychological theory.

The pioneering effort of Cornell, Linduall, and Saupe has provided the foundation for all previous efforts. Refinements have been made, but the essential elements remain. The declared purpose of this attempt was to "measure differences in classrooms as a means of characterizing differences of school systems." The dimensions, defined a priori, were as follows: differentiation, social organization, initiative, content, variety, competency, and classroom climate.

A Code Digest now used by the observer serves as a guide in recording behavior. The number corresponding to the code best describing the state of the classroom is recorded for each.

Differentiation, for example, had some of the following categories:

1. Identical work--no teacher assistance.
2. Identical work--teacher assistance.
3. Differentiated work--ability basis--few groups--no teacher assistance.
4. Differentiated work--ability basis--few groups--teacher assistance.
5. Differentiated work--ability basis--individual--no teacher assistance.
6. Differentiated work--ability basis--individual--teacher assistance.
7. Differentiated work--ability and interest basis--few groups--no teacher assistance.
8. Differentiated work--ability and interest basis--few groups--teacher assistance.
9. Differentiated work--ability and interest basis--individual--no teacher assistance.
10. Differentiated work--ability and interest basis--individual--teacher assistance.

4. STRATEGIES OF TEACHING

B. Othanel Smith, Milton Meux,
Jerrold Coombs, and Graham Nuthall

This new study extends and broadens earlier research into classroom behavior by Smith and his associates. A newly conceived verbal unit, the strategy, forms the basis of the analysis. In addition, two other units, the venture and the move, are used to help identify and clarify the concept of teaching strategies.

The study is rather complex. It involves a classification for content and teaching strategies. It is unusual in the sense that it is aimed at developing a framework and a set of concepts which may be used to describe and analyze the classroom discourse associated with achieving content objectives.

5. ADLERIAN "PHILOSOPHY-PSYCHOLOGY"

Rudolf Dreikers is the principal proponent of Adler's philosophy. The approach is psychoanalytic in the sense that it is based on an intense appreciation and understanding of the psychic of parent and child or teacher and learner. It suggests that learners must have the opportunity to experience the natural consequences of their behavior dominated by teachers. While Adlerian philosophy does not enter directly into the area of content, its application would significantly modify every aspect of teaching and learning in the classroom.

6. RELATIONSHIP OF TEACHING METHODS TO THE OUTCOMES OF EDUCATION

There have been several extensive and highly visible studies in this area. The studies have particular relevance for the consortium because they are designed to measure outcomes. The most extensive study, the Eight Year Study, concerned the "progressive" and traditional school. It has been replicated many times with strikingly similar results and probably should not be further tested unless the methodology is significantly modified. This is not true of the Lewin-Lippitt-White Studies of democratic--autocratic--laissez-faire boys' club atmospheres. This study needs to be undertaken in a conventional school setting with, of course, different words for the emotional laden terms.

7. GROUP DYNAMICS

The group dynamics approach, as viewed here, should be seen as a teaching method rather than as a study of group process. The major target of education is change and growth in the individual and his behavior. This is a deeper and broader goal than cognitive learning only. Thus, it appears that the group dynamics approach is placed on two points: (1) Much cognitive learning does not reflect itself in general behavior; this is a problem of transfer. Pertinent here are studies frequently labeled "problem-solving," which demonstrate that persons who have acquired given responses frequently do not use them in the problem situation. The major point seems to be that cognitive learnings may not become a part of the individual's general response repertoire but rather remain as isolated responses elicited only by "academic" stimuli. (2) Schools should place emphasis on, and take responsibility for, other than cognitive learnings.

The best way to facilitate the kind of learning which is advocated is through the removal of "learning blocks." It is held that the major inhibitor of learning is the fear on the part of the learner of exposing himself, of opening himself to the possibility of change. Furthermore, in a teaching situation, it is thought that the best way to remove such blocks and hence provide a situation in which learning can occur is to provide experience in expressing personal feelings--discussing the "blocks," etc. It is argued that most teaching situations present too many threats to the individual's self-esteem for him to be able to open himself to change.

There appear to be a number of questions pertinent to this method to which future research can be expected to provide answers:

1. To what extent do students, after experience with this method, become better able to attend to problems, content, etc.?

2. To what extent do participants in such a method become more sensitive to the behavior of other persons and particularly to the effects of their own behavior on others?

Since such sensitivity is held to play a vital role in a good learning situation and since a primary goal of the method is the development of this characteristic, this question seems of paramount importance. A study by Gibb and Gibb (1952) provides some indirect support for this contention in showing that students who had participated in such groups tended to be rated higher than other students in likableness and group-membership skills.

One group dynamics approach that should be worthy of consideration is described in Herbert Thelen's book, Education and the Human Quest. Unfortunately, few school districts will allow the scholars specializing in group dynamics to work with public school learners for a long period of time, but the need for longitudinal studies is no less acute.

8. PARADIGMS

There are numerous theories and/or paradigms designed to clarify teacher and learner behavior and to provide an organized framework for further study. The task of deciding which theories to further test in school sites should be undertaken by several practicing scholars since a thorough knowledge of most theories is an essential requirement. It is perhaps sufficient to mention here that the paradigms of Mitzel, Ryans, Runkel, and Mowrer, explained in some detail in the Handbook of Research on Teaching, should be examined in detail. Indeed, one of the principal responsibilities of the consortium will be to modify existing paradigms and develop new paradigms.

9. INDUCTIVE-DEDUCTIVE TEACHING

The national curriculum projects sparked new life into the classical issue concerning the merits of inductive or deductive teaching. The prevailing position may be to abandon the quarrel in favor of using both. The UICSM (University of Illinois Committee on School Mathematics) did just that. It, however, has subjected the entire heuristic method to intensive study. Beberman maintains that a learner should become aware of a concept before a name is assigned the concept. The persons in the consortium will doubtless find that it is not profitable to engage in an either/or approach in this or any other area.

APPENDIX C

AIRLIE HOUSE CONFERENCE PAPERS

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NATIONAL EDUCATION ASSOCIATION
Center for the Study of Instruction
Innovation in Planning School Curricula
Airlie House Conference
October 2, 3, 4, 1965

GUIDELINES TO HELP SCHOOLS FORMULATE AND VALIDATE OBJECTIVES

Robert L. Brackenbury

The desirability of clearly conceived objectives, indeed the indispensability of them, hardly needs to be belabored. Objectives are to the educational enterprise what a destination is to a ship. Both teaching and seamanship need direction if they are to have meaning and significance.

Still, obvious as the need for objectives would appear to be, such a need is often not recognized in actuality. Dr. Ole Sand reports attending a conference at which the directors of various comprehensive programs for school improvement acknowledged that after two or three years of operation one missing component was recognized. "The group felt the lack of formally stated educational objectives."[1] John A. Perkins, President of the University of Delaware, writes of the difficulty in determining which college is best. Deploring the use of such criteria as faculty-student ratio and number of books in the library he states, "to rate a college on its tools for learning...is like buying a certain auto on the basis of the size of the factory where it is produced and the sophistication of its assembly line, rather than on road performance and price."[2] Perkins goes on to state "because colleges are not exactly comparable, it becomes doubly important that each one define its objectives and ascertain whether or not it is achieving them." Thus, again, we are reminded of the necessity of objectives while at the same time we are told that educational undertakings seem to function frequently without them.

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[1] See p. 7 of the proposal submitted by the Center for the Study of Instruction for a Developmental Activities Program.

[2] John A. Perkins, "Which College Is Best?," Saturday Review, September 11, 1965, p. 72.

Why is it that the recognized need for educational objectives is so frequently honored in the breach? Perhaps it is simply that man is not so much a rational animal as he is a reasoning one. Man seldom figures out intellectually what he ought to do and then does it, but he frequently finds himself in a quandary and for better or for worse he reasons his way out. Thus, the logical necessity of objectives can easily be demonstrated, but unfortunately the problems of men are seldom logical. They are generally psychological. Thus, a very logical rationale for the formulation and validation of educational objectives such as that advanced by Ralph Tyler[1] may be ignored by educators simply because it is not structured along the lines of the problems they encounter.

Merritt M. Thompson writing in the Harvard Educational Review says, "The third major defect in statements of objectives is their lack of dynamic or moving power."[2] Professor Thompson goes on to state that:

> at least part of the difficulty...grows out of the necessity of discussing objectives in two universes of discourse which must be superimposed without

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[1] Ralph W. Tyler, Basic Principles of Curriculum and Instruction (Chicago: University of Chicago Press, 1950).

[2] Merritt M. Thompson, "Levels of Objectives in Education," Harvard Educational Review, Vol. XIII, No. 3 (May, 1943), p. 198.

> being identical.... The two realms of thought referred to are the logical and the practical or functional. All statements of objectives must at the same time satisfy the requirements of logical consistency, sequence, etc., while they offer practical help to teachers in real situations and are in such form that they adapt themselves to the conditions of a real world.... Ideally, there should be no conflict between the two points of view, but actually much of the abstract-concrete problem grows out of a failure to recognize the distinction.[1]

What teacher ever prepared for his first day in class by first asking, "What are the educational objectives which my class should seek to attain?" As Professor Macdonald correctly points out, the more likely question the teacher will raise is "What am I going to do?" In discussing the myth of rational decision making, Macdonald states that:

> The proposal that the teachers make a series of rational decisions about objectives...is the core of this myth.... Objectives are viewed as directives in the rational approach. They are identified prior to the instruction or action and used to provide a basis for or a screen for appropriate activities.
>
> There is another view, however, which has both scholarly and experiential referents. This view would state that our objectives are only known to us in any complete sense after the completion of our act of instruction. No matter what we thought we were attempting to do, we can only know what we wanted to accomplish after the fact. Objectives by this rationale are heuristic devices which provide initiating sequences which become altered in the flow of instruction.[2]

On the assumptions that man is basically a problem-solving animal and that the problems he encounters in his experience are more likely to be psychological than logical ones, this paper is largely an attempt to recast the "Tyler rationale" for the formulation and validation of objectives into a different mold. It is in no way a refutation of that rationale, it is merely a reformulation.

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[1] Ibid.

[2] James B. Macdonald, "Myths About Instruction," Educational Leadership, Vol. 22, No. 7 (May, 1965).

One further explanatory note seems in order. For some time it has been recognized that there are various levels of objectives.[1] This paper is focused on the institutional level as opposed to both the societal level and the instructional level. Thus, the objectives formulated by school administrators and staffs will not likely be as sweeping as are those stated by school boards, state legislators and federal officials, but at the same time they are apt to be broader than the detailed ones constructed by the classroom teacher.

The following eight tasks need to be accomplished by any educational institution undertaking a formulation of its objectives. They need not necessarily be undertaken in the order listed, though a school system might be well advised to take the first step first.

1. Achieving Commitment

Probably more curriculum reforms have been subverted by the company of the uncommitted than by any other factor. But such is often not recognized to be the case because of the difficulty in distinguishing the uncommitted, or rather the half committed, from the wholly committed. The half committed are intellectually sold on the need for change, but are not actually emotionally involved.

The distinction between intellectual and emotional commitment is well illustrated by the smoker who cannot break his habituation to tobacco despite his resolve to do so. He says to himself, "I know I should give up smoking," and indeed he does know this in the sense that he is intellectually aware of the likely harm his smoking does to his body. But if he leaves out of his analysis the recognition of the pleasure and satisfaction that smoking gives him, his resolve to quit may well be inadequately formulated. He is only "half-committed."[1]

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[1] Thompson, op. cit. Thompson identified four levels of objectives in his 1943 article while the current CSI-University of Pittsburgh Proposal recognizes three.

During the heyday of Progressive Education, droves of educators flocked to Teachers College to become exposed to the theories of Dewey, Kilpatrick, et al. Many administrators and curriculum supervisors returned to their respective schools sold on the validity of the new pedagogy.[2] At least they were intellectually sold and doubtless many were emotionally sold as well. But even the latter may often have failed to transfer their emotional commitment to the classroom teachers who ultimately had the task of implementing the theory. The teachers' involvement may not have been complete since it did not come about from within—i.e., it did not arise from a recognized need growing out of their experience.

Of course, not all recognition of need arises from internal combustion. As is pointed out in the CSI-University of Pittsburgh Proposal,

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[1] It could be said he suffers from half-aspirations.

[2] The phenomenon here under consideration has nothing to do with the direction of the change. Robert Hutchins, who is hardly a "Progressive," in reflecting upon his administration at the University of Chicago writes, "It is one thing to get things done. It is another to make them last. I was interested in effecting permanent improvements in American education, not in keeping the University of Chicago in an uproar. I should have known that the existence of a large and embittered minority, which felt that fundamental alterations of the University and its program had been pushed through without consideration of its point of view, destined such alterations to endure only until the minority could muster the strength to become the majority." (Robert M. Hutchins, Freedom, Education and the Fund (New York: Meridian Books, 1956), p. 186.

"the doctor does not invent every pill that he prescribes; the farmer does not invent each seed that he plants. Schools do not need to repeat all the steps of innovation, nor are they equipped to do so."[1] True. But a patient would not long retain a physician who prescribed pills simply on the basis of their intrinsic qualities without bothering first to make a thorough diagnosis. And the educator who indiscriminately swallows the pills passed out by the professional theorist simply because he is informed of their beneficial powers is not likely to experience their healing potential. Just as the patient recognizes that he is sick before he goes to the doctor for aid, so should the pedagogical practitioner be suspicious that all is not well before he seeks the curriculum consultant. It is true that a person may be unaware of an illness that he has and that its existence may be detected by a physician. But the patient's cooperation is needed to combat the malady effectively. In a like manner, a school system may be sick and a curriculum consultant may be able to analyze the nature of the illness correctly. But the educational practitioner must recognize his need as his own before his commitment to corrective steps is complete. Indeed, the very first step in problem solving, that of recognizing the existence of a problem and the identification of its nature, often turns out to be a most difficult and crucial one.

Thus the educator who employs objectives, whether it be an administrator at the institutional level or the teacher at the classroom level, should be integrally involved in the formulation of objectives from the very beginning. If he is not, he is most unlikely to experience the true conversion that leads to commitment. Missionaries have discovered that it is not enough for them to preach The Word. Rather they have learned that effective ministry calls for them to acquaint themselves with the problems of potential converts and to aid the latter effectively in solving their problems. Only then will the missionary really be heard. So must the curriculum consultant learn that it is not enough to possess the Truth. It must be transmitted in a form usable to the recipient. Until it is, curriculum reforms will continue to be unknowingly sabotaged by the company of the uncommitted.

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[1] CSI-University of Pittsburgh Proposal, op. cit., p. 8.

It is easy to tell a person what he ought to do, but extremely difficult to structure a situation so that he comes to discover on his own that he ought to do it. But teaching is not telling and whatever else the curriculum consultant may be, he should be a teacher. Thus, it is simply not sufficient to tell an educator that there is an urgent need to reconstruct the curriculum and to inform him that he ought to get about the task. He must be made to want to do so. This calls for human engineering and there should be no reluctance to engage in it. There is nothing undemocratic or authoritarian about behavioral engineering for personal freedom is in no way violated. "We have no vocabulary of freedom in dealing with what we want to do.... The question never arises. When men strike for freedom, they strike against jails and the police, or the threat of them—against opposition. They never strike against forces which make them want to act the way they do."[1]

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[1] B. F. Skinner, Walden Two (New York: The Macmillan Co., 1948), p. 263.

There is, of course, no simple formula for achieving commitment. It is easy to say that a fully committed person must be emotionally, as well as intellectually, involved, that he must feel the problem is really his and not just one that an outsider has sold him, and that he must genuinely want change because his wanting has grown out of his own experience. But how might such guidelines operate in actual practice? While there is no rule-of-thumb that can be followed, a simple suggestion might illustrate one approach that would be in line with these guidelines.

It is common practice in school surveys to ask all members of a staff to state several strengths of their program as they see them and to indicate several weaknesses as well. No matter how fine a school system may be, educators always seem to be ingenious enough to suggest numerous ways it can be improved. Generally administrators and staff members are convinced that curriculum revision is needed before they call in consultants. But the latter might still be well advised to begin by asking the administrators and staff members to indicate the strengths and weaknesses of the program as they analyze them. To be sure, not all suggestions will pertain to the objectives of the program, but an appreciable number of them should relate indirectly, if not directly, to objectives. Any suggestions for modifying the content of the curriculum, for changing the teaching methods employed, for better organizing the learning experiences offered or for improving the testing program cannot be intelligently analyzed without consideration of the objectives which the school is seeking to accomplish.[1]

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[1] It hardly seems necessary in this paper to point out that objectives are needed as criteria in order to plan intelligently the school program. The indispensable role of objectives in the entire educational enterprise has many times been elucidated but perhaps nowhere more clearly and concisely than by Ralph Tyler in his Basic Principles of Curriculum and Instruction.

Thus the consultant can raise the question of objectives as it naturally arises out of the experiential concerns of those who must in the final analysis effect the curriculum revision. (A similar approach can be employed by administrators, supervisors, and consultants when they work with teachers at the classroom level.)

2. Recognizing the Nature of Objectives

Once commitment to curriculum revision has been achieved and once the need for the clear formulation of objectives has been recognized, the next problem that is likely to arise is: What precisely is the nature of objectives? If objectives are to function in the process of curriculum construction, they must be properly conceived and stated.

First, the distinction between objectives on the one hand and aims and purposes on the other should be clearly perceived. Objectives are obtainable while aims and purposes are not. The latter are of the nature of ideals and ideals, Carl Schurz reminds us, are like the stars—we never reach them, but like mariners on the sea, we chart our course by them. Objectives, by contrast, are destinations to be reached. They are potentially obtainable however difficult in actuality their realization may prove to be. An illustration of this distinction can be made by contrasting that which the curriculum consultant should have in mind when he goes into a school with that which should emerge from the analyses of the practitioners. In all likelihood the consultant believes that the knowledge explosion calls for new content to be added to the curriculum while other changes in the social order call for some present content to be dropped. He may well also believe that before a curriculum can be intelligently modified those in charge of it need to have a clear idea where the program is heading. But these beliefs are of the nature of aims or goals.. They guide the consultant's actions, they do not specify the outcomes of his efforts—i.e., they are not objectives. The latter emerge from the joint efforts of consultants and practitioners and their precise formulation cannot be known in advance.[1]

Second, objectives should be conceived and stated in terms of the behavioral changes that are sought as well as the content with which the behavior deals. It was not too long ago that one frequently heard the nauseating question, "Does the teacher teach subject matter or does he teach the child?" This question was nauseating because only a moment's reflection should have been sufficient to lead to the answer, "The teacher does both." Every teacher teaches subject matter and if he really teaches it, he must teach it to a learner. If teaching fails to bring about behavioral changes in the learner, the teacher has no more "taught" than has a salesman "sold" when the customer refuses to buy. Education, if it is anything, involves the changing of behavior as John Ruskin so clearly perceived when he maintained that education does not mean teaching people what they do not know. It means teaching them to behave as they do not now behave. Thus, objectives should be conceived and stated both in terms of the kind of behavior to be brought about and in terms of the subject matter, discipline or area of life in which the behavior is to function.

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[1] If the distinction here made between objectives and aims or purposes seems too strained or if it seems to be a distinction in degree rather than a distinction in kind, the reader may prefer simply to acknowledge that there are levels of objectives. The objective for kindergarten pupils may be to build an airport while the teacher is interested primarily in helping them learn to accept responsibility and carry out an assignment. Whether the teacher's interest is labeled an aim or purpose or whether it is regarded as another level of objectives is perhaps not too important so long as it is recognized that pupil and teacher need not have identical goals.

3. Exploring the Sources of Objectives

Once the nature of objectives is conceived the next likely question to arise concerns their source. From where do they come?

Wherever the educational process goes on there will be found two indispensable ingredients—a learner and a culture, for that which is learned results from the interaction of the two. Thus, it would seem to follow that in formulating objectives educators should study children and the social order. Such study can either be personal and direct or it can be vicarious—i.e., educators can turn to the professional literature for studies of learners and contemporary life. The professional literature also contains a third source of suggestions for educational objectives—namely, the writings of subject specialists.

The learners and culture may be thought of as constituting the primary sources of objectives while professional literature may be regarded as a secondary source. But to designate professional literature as a secondary source is in no way to belittle its importance. As every historian and lawyer knows, an account of a battle or an accident by a trained, intelligent and objective investigator who was not himself an eyewitness may be far more accurate an appraisal of what actually occurred than an account of a person who was on the scene. Moreover, there simply is not time for every educator to make a complete, first-hand analysis of learners and the social order nor would it be desirable for him to do so if he could.

There is much to be gained from perusing the writings of subject specialists. School textbooks, courses of study and various professional reports are generally written by specialists in subject matter areas. Often these specialists do not specifically identify educational objectives, but the latter are usually implicit in what they say. With a little searching and ingenuity, suggestions for objectives can be surmised. But a note of caution needs to be added. Specialists often are so close to their specialty they give the impression that great values reside in the subject matter with which they are concerned. But values never reside in subject matter or content alone. Nor do they reside in the person alone. That is to say, values are neither objective nor subjective. Rather they are operational or experiential. It is the interaction of a person with his particular wants and needs with a subject field with its unique qualities that results in values. Thus the educators should never permit the subject specialist to lead him to believe that decisions concerning the subject matter to go into the curriculum should ever be decided solely on the basis of any alleged intrinsic values thought to reside in a particular subject. But if an educator can avoid this danger, he has much to gain from listening to the specialist.

Studies of learners also constitute a rich source of suggestions for educational objectives. No educator can today keep up with all the work being done in the biological sciences, in psychology and social psychology and in the interdisciplinary studies in human development. Still, the major findings and developments in these fields are reported in the professional literature and they are available to the educator. Scientists are frequently content to describe the learner as they find him, but even such descriptions often suggest in the minds of the reader conditions as they ought to be and the recognition of a gap between what is and what ought to be can lead to the formulation of objectives.

Studies of contemporary life and the culture in which the schools exist constitute still another source of suggestions. Schools were probably first established when a social order became so complex that parents no longer had the time or ability to teach their offspring all they wanted them to know. So schools were established to pass on the cultural heritage. Fortunately, no social order is ever static, but this fact does complicate the task of the school. The history of education is replete with accounts of educational reformers who differ to a greater or less extent from each other. But the one message they nearly all preach in common is that the schools in any given era have been out of touch with the social order. Today the changes in our society are so rapid that the problem of reducing the lag between curriculum and culture seems almost insoluble. Indeed it would be, without the studies made by sociologists, anthropologists, political scientists, economists, and other social scientists. Their studies of the social order at all levels—local, national and international—inform educators of changes of which the schools must take account.

The fact that the professional literature is indispensable to the educator who is seeking to formulate objectives in no way relieves him of the obligation to make a personal and direct study of learners and community. For the literature, of necessity, contains generalizations, while the educator always deals with specific individuals. Generalizations concerning the behavior of adolescents or the social stratification of American society are most helpful in understanding learners. Still, no given adolescent ever behaves precisely as adolescents generally are thought to behave just as no lower class child ever exhibits all the characteristics attributed to his class. Thus, there remains the need for educators to study their unique school populations. Much can be learned from careful and systematic observations by teachers, from interviews of students and their parents, from questionnaires thoughtfully constructed and administered, from the study of cumulative records and from the results of a wide variety of tests. Also, a systematic survey of the school community is likely to produce findings that may surprise even the most experienced teacher. Indeed, the time may not be far off when the need for a school sociologist will be recognized as being as great as is the need for the school psychologist.

Should the findings of personal and direct study conflict with those reported in the literature, the educator might well wonder which to believe. Indeed, he would be rash to reject summarily the insight of specialists and scholars, but on the other hand he would do well to remember the advice of Emerson when he wrote:

> Familiar as the voice of the mind is to each, the highest merit we ascribe to Moses, Plato, and Milton is that they set at naught books and traditions, and spoke not what men, but what they thought. A man should learn to detect and watch that gleam of light which flashes across his mind from within, more than the lustre of firmament of bards and sages. Yet he dismisses without notice his thought, because it is his. In every work of genius we recognize our own rejected thoughts; they come back to us with a certain alienated majesty.[1]

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[1] Ralph Waldo Emerson, Essay on "Self-Reliance," as quoted by Robert Ulich in Three Thousand Years of Educational Wisdom (Cambridge: Harvard University Press, 1950), p. 594.

4. Determining the Appropriateness of Objectives

Once all the sources of objectives have been tapped, the flow of suggestions for educational objectives may well inundate the educator. Which suggestions should he utilize and which should he reject? In solving this problem, the schoolman might well consider first the appropriateness of objectives.

Educators commit many professional sins and one of the most common is that of parochialism. They find it very easy to equate schooling with education and proceed as though all of the latter takes place in the former. This, of course, is not the case as educators well recognize in their better moments. Still it is well to have a Mark Twain remind school men of this fact as he did when he said, "I never let my schooling stand in the way of my getting an education."

Since children learn at home and at church, from the mass media and from other social forces the question naturally arises: What learning should the schools seek to foster and what learning can the schools leave to other social institutions? Surely the schools have so much to do that they would be well advised to leave to the community any tasks that can be done as well or better by other social agencies.

Whereas the public schools once existed to perform only a few basic functions such as the teaching of the 3 R's they have, over the years, taken on an astounding number of other tasks such as citizenship training, the teaching of moral and spiritual values, vocational education, homemaking, driver education, and a host of other undertakings. Whenever a basic social institution such as the family changes so that it no longer adequately performs a function it once did, and when the social order still deems it wise to have this function performed, it is quite likely to assign it to the schools. This phenomenon has sometimes been referred to as the "residual function" of the schools.

In all likelihood the public schools will continue to take on new tasks as the nature of our society changes, but this does not mean that they must accept uncritically any task that is proposed. What criteria should be employed in deciding whether the schools should welcome or resist a proposed function? Many criteria have been advanced.[1]

One criterion has already been suggested—namely, that LEARNING WHICH IS BEING PROMOTED AS WELL OR BETTER BY OTHER SOCIAL AGENCIES SHOULD NOT BE ATTEMPTED BY THE SCHOOLS. Even the learning responsibilities which are shared by the school with other institutions such as the home should not generally receive as high priority as those tasks which are more unique to the school alone.

A second criterion might be ALL LEARNING THAT DESERVES TO BE CALLED EDUCATION IS FUNDAMENTALLY INTELLECTUAL IN CHARACTER. Theorists as far apart as Robert Hutchins and John Dewey would seem to be in agreement on the intellectual character of education. Hutchins has repeatedly asserted that the unique function of education is the training of the mind or the cultivation of the intellect. Dewey was no less concerned about thinking when he wrote:

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[1] Six excellent criteria were suggested by Sand in his Position Paper, "Current Trends in Curriculum and Instruction," prepared for a Seminar-Conference on Comprehensive Musicianship, p. 17.

> No one doubts, theoretically, the importance of fostering in school good habits of thinking. But apart from the fact that the acknowledgment is not so great in practice as in theory, there is not adequate theoretical recognition that all which the schools can do or need do for pupils, so far as their minds are concerned (that is, leaving out certain specialized muscular abilities), is to develop their ability to think.... Skill obtained apart from thinking is not connected with any sense of the purposes for which it is to be used. It consequently leaves a man at the mercy of his routine habits and of the authoritative control of others.... Information severed from thoughtful action is dead, a mind-crushing load.[1]

Hutchins and Dewey disagree violently over how thinking can best be developed, but over its desirability there is no disagreement. If a hot lunch program is solely a feeding operation it does not belong in the school. If, on the other hand, the service is integrated with instruction concerning the selection of a balanced diet and the development of desirable eating habits, then indeed it belongs. And what about programs of physical education? The same criteria hold. If the stress is placed on the noun "education" rather than on the adjective "physical" (as something separate and distinct from the mind), then the program is a legitimate part of schooling. But if the stress is placed upon the development of "skill obtained apart from thinking" (to use Dewey's words), then the program is an illegitimate off-spring and has no claim to educational respectability. Thus, the criterion— Is the function one that is fundamentally intellectual in character?—

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[1] John Dewey, Democracy and Education (New York: The Macmillan Company, 1916), p. 179.

is useful not only in selecting content to be added to the curriculum, but it is useful in determining content to be eliminated.[1]

To assert that all learning with which the schools are concerned should be intellectual in character is not, however, to say that the schools should only be concerned with intellectual development. Whitehead reminds us that there is only one subject matter of education and that is life in its many manifestations. Thinking is only one manifestation of life. There are desirable attitudes to be developed, interests to be broadened, sensitivities to be awakened, aptitudes to be explored and a host of other behavioral changes upon which the schools must focus attention. They must do so simply because learning is multiple even though a learning experience has an indestructible unity. Children learn many things at the same time. While the teacher is concentrating upon the development of an arithmetical skill his pupils may be learning to like or hate arithmetic at the same time as they learn to manipulate numbers. Indeed, the attitudes and interests they develop may in the long run be far more important than the skills they learn.[2] Therefore the schools need to be concerned with a wide range of behavioral changes. They also need to be concerned with the significance of the content they seek to teach. Whitehead warns of the dangers of teaching inert ideas[1] and maintains it is desirable to teach but a few viable concepts over and over again in different contexts. In recent years, great strides have been made by scholars in identifying the really big ideas in the various disciplines and the public schools should shift their emphasis in imparting knowledge from inventory to significance. Thus, a third criterion for determining the appropriateness of objectives might be that A SOUND EDUCATIONAL PROGRAM DEMANDS A SET OF CRITERIA THAT HAS A BALANCE BETWEEN THE BEHAVIORAL CHANGES SOUGHT AND IS CONCERNED WITH SIGNIFICANT CONTENT. Even in an age of specialization, the one-sided development of an individual or a field of knowledge can be a catastrophe.

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[1] It is not here being suggested that curriculum constructor constantly turn the education program inside out like the Calvinist who incessantly examines himself for evidences of sin. Indeed, the time may well have come for a speech on "What's Right in American Education." In fact, this writer once attended a lecture with this subject the topic, but he was so astounded by the speaker's audacity and so sure the topic was subversive that he didn't really listen.

[2] The real task of the teacher is to make himself dispensable as soon as possible. This means children should learn how to learn and if they learn to enjoy learning they are well on their way.

5. Establishing the Worth of Objectives

Once the appropriateness of objectives has been determined their worth must then be considered. Not all objectives are of equal value. While it is a task of the school to prepare the young to take their place in the social order, the social order is hardly perfect enough to want children to adjust to it as it is. Would anyone argue since gambling is a major industry in America that the schools should teach children how to read racing forms and how to figure the odds of going broke in black jack if one hits on sixteen?[2] Indeed our environment needs to be purified as well as simplified, at least for the very young.

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[1] See Chapter 1 of Alfred North Whitehead, The Aims of Education (New York: Macmillan, 1929).

[2] It could be that a mathematics teacher might teach children how to figure odds even in games of chance, but he would undoubtedly do so in hopes of discouraging gambling.

Whether the educator is aware of it or not, value judgments underlie each objective that is employed in directing the educational program. To accept "the development of appreciation of short stories" as an objective in English is to decide that this objective has more value than others that might have been selected. Thus, the educator cannot avoid making value judgments though the values he employs as criteria need not be his own. Indeed, the basic values which the schools seek to perpetuate come, not from the professionals who run the schools, but from the social order itself in which the schools exist.

Thus, it is to the cultural anthropologist and to the philosopher that educators must turn to ascertain those basic values which constitute the democratic ethos. Neither the social anthropologist nor the philosopher create values. The former discovers and describes them while the latter clarifies and critiques them. Unfortunately, the scholars in these disciplines are not proclaiming a clear and concise set of values. Thus, one of the dilemmas in which the educator finds himself lies in the fact that while the schools take their direction from the social order in which they exist, the mandate from the American public today is anything but clear. There was a time when this was not so for the schoolman of a century ago knew reasonably well what the public wanted. Even today in a society like Russia, educators clearly perceive what is expected of them. The communist party line may change overnight, but school administrators and teachers have little doubt what it is. This is not the case today in the United States. The schools have been selected to be the very battleground upon which various social issues, such as civil rights and the separation of church and state, will be fought. The educator finds himself in the eye of a cultural hurricane, the direction and speed of which can be predicted with uncertainty at best.

In such a predicament the educator often feels compelled to make decisions that should have been made by the public. For if the public has not reached a consensus and if curricular decisions must be made, what can the educator do but use his own best judgment and proceed. Indeed, such action is understandable, perhaps even excusable, but it is hardly desirable. For the ultimate goals, aims and ends of education—along with the values they imply—are the rightful prerogative of the lay public in a democracy whereas the best means for attaining the ends should be left in the hands of the professional. All too often, however, legislatures and school boards get bogged down in the details of curriculum content while they leave undone their task of determining goals, aims, and ends. Thus, the professional educator is left to surmise as best he can the basic values that constitute the democratic ethos at any given moment. He should realize, of course, that his task is to employ not his own personal values but those of society, however difficult the latter may be to determine. He should also realize that there are at least a few basic values upon which the vast majority of citizens would seem to agree.[1] These values include the beliefs that in a democracy (a) the individual has intrinsic worth and dignity—i.e., that all men should be regarded as ends and never as mere means; (b) all men have the right to equality of opportunity—so that their real inequalities can be discovered and developed; (c) all men have the right to participate in formulating goals and purposes that shape their lives; and (d) all men possess the ability to make rational decisions. Such values as these, along with others that can be formulated, should be made explicit for only if they are can they properly function as a screen for decisions concerning educational objectives. And only if they are made explicit can they be enumerated to the public and a determination made of their validity.

6. Ascertaining the Feasibility of Objectives

Even after the appropriateness of objectives has been determined and their worth established by screening them through a carefully constructed set of values, another task remains. The feasibility of objectives needs to be ascertained. It has already been pointed out that objectives, as opposed to broad aims and purposes, should be attainable. But an objective that is quite attainable at one level or age may be unattainable at another. It is with this matter that the educational psychologist can again be helpful. For the educator needs to understand both child development and the laws of learning if he is to formulate objectives that are feasible at each level of education.

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[1] Of course, Americans also disagree on far more values than they agree upon but this disagreement need not be the source of undue concern. In democracy, differences can be a source of strength for only does the monolithic state regard them as necessary weaknesses. Americans have discovered that they do not have to think alike in order to agree upon programs of action. The atheist may have quite different reasons from the religious man for wanting dope peddling stamped out, but the two may wholeheartedly agree upon the desirability of it and a program of action intended to accomplish it. In a like fashion, members of a school staff may differ greatly in their philosophies and still cooperate to formulate a set of objectives that wins complete support.

Educators have become quite sensitive to the fact that it is not only a waste of time on the part of the teacher to try to teach a child a skill or a concept before he is ready, but the effects of such attempts on the child may prove downright harmful. Readiness in reading and in other disciplines has been systematically studied. The reverse of this phenomena, however, has seldom been studied and seldom been recognized in practice despite a plethora of maxims such as "You can't teach an old dog new tricks," and "As the twig is bent so grows the tree."

It can be argued, of course, that so long as life goes on, a change in behavior is always within the realm of the possible. Possibly so. But surely the probability of certain kinds of changes occurring at one age is far greater than at another.[1] Thus if a school desires to reduce racial and religious prejudice, it would be well advised to strive for this objective in the early elementary years rather than put it off until behavior habits and patterns are more firmly set.

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[1] Gordon Allport was once asked whether it is possible to eliminate prejudice in a mature person. He is alleged to have responded by telling the story of a man who, when getting along in years, went to his doctor for a check-up. It seems that throughout his life he had hated Catholics and he made it a point to go out of his way to make disparaging remarks concerning them. His doctor examined him carefully and then regretfully informed his patient that he had cancer in an advanced stage and that in all probability had only a few months to live.

Also, psychology can aid us in determining sequences in learning and in alloting realistic periods of time for the attainment of certain objectives. Not all objectives can be realized overnight or even in a semester. If one of the broad aims of the social studies program is to develop an understanding that we live in an increasingly interdependent world, it may well be that this concept will need to be taught "over and over again in many different contexts." Such an objective could be sought through the study of community helpers in the kindergarten, while in college the efficacy of the United Nations could be considered (there are many who doubt that in an increasingly interdependent world any world organization that is only a confederation, as opposed to a federation, can work). The interdependency of the modern world simply cannot be grasped quickly.

Unless objectives are consistent with what is known about ideal conditions for learning, they may prove to be of little worth as educational goals. They may be attainable or unattainable, appropriate or inappropriate to a given age level and such decisions can wisely be made only if possible objectives are screened through the elements of a defensible psychology of learning.

After the man thought it over and had been reassured there could be no error in the diagnosis, he startled his physician (who knew of his hatred of Catholics) by announcing that he was going to join the Catholic Church. After recovering his shock, the physician asked "Why?" and his patient responded, "Why you see, Doc, I'd rather have one of them die than one of us."

7. Organizing the Staff for Action.

Long before this point in the paper, the reader must have wondered who is to do the work of formulating and validating objectives and how, specifically, is it to be carried on? It might be helpful to preface suggestions concerning how such an undertaking could be accomplished with a caveat concerning approaches to be avoided.

The easiest way to obtain a set of objectives is simply to borrow one from a good school system or hire consultants to furnish a set. Either approach might result in some fine sounding objectives, clearly stated and internally consistent. They might or might not, however, be well suited to the system for which they are to be used. But even if, by chance, they were appropriate their formulation would still leave much to be desired. For the very practitioners for whom they should serve as criteria for selecting learning experiences and for constructing tests would have no part in their formulation. Consequently, their full understanding of and emotional attachment to such objectives would likely not be complete.

Another approach more frequently used but hardly more defensible is that of assigning a small committee of the staff to do the job. This procedure does have the advantage of involving at least some of the system's personnel, but generally so small a proportion that little is really gained. Moreover, those who are given the task may well have the feeling that the top administration thinks the undertaking is important enough to require doing but not important enough to require its own participation. Is it any wonder that objectives thus formulated are generally filed and forgotten?

If democratic action calls for all parties affected by decisions to participate in the making of them, then surely all administrators and staff members should, in one capacity or another, become involved in formulating and validating institutional objectives. Not all must serve on one gigantic committee of the whole, to be sure, but each should participate in some manner.

One possible approach to getting the work done might call for a procedure somewhat along the following lines:

a) In a general meeting of all administrators and staff members the superintendent might express his continuing interest in reappraising and improving the school system and state that he welcomes the thinking of all as to how this should be done. He could specifically request that each member of the staff submit in writing his analysis of the strengths of the present program and his suggestions for improvement. He should stress that these comments should be anonymous and that they would be turned over to outside consultants for analysis.

b) After the consultants have gone over all suggestions, they should plan with the top administration for another general meeting at which time a summary of the findings could be reported and the need for a thorough curriculum study be discussed (as previously mentioned, there is every likelihood that the comments submitted, whatever their specific nature, will suggest the need for changes in the program). The consultants could then point out the indispensability of clearly stated objectives and their use as criteria in constructing the curriculum and in planning the testing program. The nature of objectives could be discussed as well as the desirability of stating them in terms of both the behavioral changes sought and the content dealt with. Finally, specific plans for obtaining objectives could be agreed upon.

c) A committee could be appointed charged with the task of formulating and validating objectives. This committee should be a cross section of the staff and might be headed by the Assistant Superintendent in Charge of Instruction if there be such. The following sub-committees could be appointed.[1]

Psychology. This group could go to psychology to obtain suggestions for objectives growing out of studies of learners and to obtain the elements of a defensible psychology of learning through which possible objectives can be screened for attainability and appropriateness.

Social Sciences and Philosophy. Another group could turn to the social sciences to obtain suggestions for objectives growing out of studies of contemporary society and to obtain concise statements of values through which possible objectives can be screened to determine their worth.

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[1] It would seem desirable to have a consultant work with each of the subcommittees. Also, if the size of the staff permits, the work to be done could be further sub-divided. In any event, it would seem desirable to involve all members of the administration and staff in some committee work.

Subject Fields. Still another group could explore the literature in all appropriate subject fields to obtain suggestions for objectives growing out of the writings of subject matter specialists and to identify the viable and important ideas in each discipline in order to determine the significance and appropriateness of the content to be taught.

Each of these subcommittees would report their findings to the whole committee which has the final task of formulating and validating the objectives. This committee should state the objectives in terms of both the behavioral changes sought and content dealt with, they should ascertain whether the objectives meet the criteria for appropriateness, and they should screen them through the sets of values and the elements of sound psychology which the sub-group have specified. When these steps have been completed, the committee can then state in their final form the institutional objectives which emerge.

8. Continuing, ever; closure, never.

Human beings generally like to do a task and be done with it. Unfortunately, objectives are much like dishes. If they are used, they require repeated doing and re-doing. Since objectives grow out of experience as well as guide experience, they are never set once and for all. This is because life is always changing and it is changing so rapidly that the quest for permanence is simply a futile one. Thus, he who hopes to construct the curriculum once and for all, hopes for what never was and never

will be. Sound objectives are conceived only in fertile minds, are born only after painful labor, thrive only when regularly exercised and require regular nourishment to remain healthy.

TWO CHANGE STRATEGIES FOR LOCAL SCHOOL SYSTEMS

by Henry M. Brickell

PREFACE

Preparing this paper presented me with considerable difficulty, which I was unable to resolve. It appeared from the various documents outlining the assignment that the Center for the Study of Instruction is seeking several outcomes, which I find myself unable to supply within the scope of a single paper:

1) A general discussion of alternative strategies of educational change available in the U.S. today. This was be a critical review of the change processes available.

2) An assessment of these change strategies with respect to their possible utility to the Center for the Study of Instruction in its effort to mount pilot demonstrations of rational change processes which local school systems can employ.

3) One or more change strategies which can be recommended to local school systems on the basis of what is now known about effective change tactics and taking into account the agencies and procedures now available to local school systems.

I find Task #1 and Task #3 irreconcilable because a great number of the change strategies which might be recounted under Task #1 are not available for use by local school systems. At the same time, Task #3 calls for a section in a kind of "Administrators' Guide Book to Planning and Managing Educational Change," which would require the sorting out of the most effective change tactics now known and the reduction of these to practical advice for the operating school staff.

I also find that I know far too little about the Center for the Study of Instruction (particularly the resources which might be available for mounting significant strategic action) and too little about the rational process of instructional change which it wishes to promote, to recommend to the Center a choice of strategy.

After oscillating between these irreconcilable demands, I have prepared 8 pages to clarify my own thinking on assorted points and then - beginning on page 9 - have attempted to wring out of observational evidence and the limited available research some

PREFACE
(continued)

practical suggestions for the local school system which wants either to 1) invent or 2) adopt a new instructional program.

In an effort to do something about Task #1, I am distributing with this paper an excellent effort by Matt Miles to describe available change strategies. This is the topic which I would like to discuss at the Seminar.

TWO CHANGE STRATEGIES FOR LOCAL SCHOOL SYSTEMS

by Henry M. Brickell

A paper prepared for the
NEA Center for the Study of Instruction
October 1-3, 1965

INTRODUCTION

A strategy is a high-level, long-range plan for reaching a broad objective. It is an interlocked series of tactical activities, each one chosen to accomplish a limited objective.

The choice of a strategy is based upon knowledge (or assumptions) about what the territory between you and the objective is like and upon decisions about what you want the territory to look like after you have achieved the objective. In fact, the objective may be to change the territory. Those who advocate "change for the sake of change" or rather continuous change for the sake of continuous excitement are out to change the territory. So are those who want to make change a planned process.

The choice of tactics to be used in carrying out the strategy is based upon knowledge (or assumptions) about cause and effect relationships between a set of alternative actions and a set of specific objectives. For reasons which are not entirely clear to me, it is easier to gather evidence about the effecitvness of certain tactics than about the effectiveness of larger strategies.

Consequently, it would seem that the success of a strategy cannot be predictedexcept through knowing (or assuming) the effect of individual tactics.

We begin the discussion with a number of assumptions supplied by the Center for the Study of Instruction, among which are the following:

1) The pace of instructional change in education must be accelerated.

2) The process of instructional change ought to be rationally controlled.

3) The profession should make the final decisions concerning instruction.

4) The NEA Center for the Study of Instruction has developed a systematic plan which a local school system may use in guiding instructional change rationally.

5) The CSI plan is to be introduced into selected school systems. By using the plan, these school systems are expected to alter their operations considerably by taking on innovations which will touch many staff members. Thus an internal strategy of change is necessary for them.

6) The CSI plan leads to changes which are institutional in character, but is such that individual staff members may pattern their own decision-making upon it. For example, teachers may employ the method to modify their work in the classroom with students. The extension of the plan throughout all levels of the school system is one major objective of the project.

7) The school systems -- and the staff members -- that modify their behavior by using the plan ought thereby to be rendered more susceptible to changing again when the need arises.

The discussion in this paper is not tightly guided by the above assumptions, but deals instead with practical ideas for change strategies available to local school systems - particularly strategies and tactics for the adoption of innovations. The general recommendations for change strategies have not been decided by careful application to the CSI plan for rational instructional change within a local school system and may not match it at all points.

A STRATEGY FOR PLANNED CHANGE IN INSTRUCTION

Instructional Programs as Gap-Closing Plans

A goal in instruction may be defined as behavior desired for the learner. Failure to achieve the goal creates a problem which we seek to solve by introducing a change into the system. Thus a problem in instruction may be defined as a gap between a learner's behavior and the behavior that we desire of him.

A gap cannot be identified unless its two end points are pinned down: We must know what behavior we want of a learner and we must know what behavior he is presently capable of exhibiting. To the degree that we lack precision in describing the wanted performance or lack precision in describing the available performance, to that degree are we unable to formulate an instructional problem or to seek a solution. Indeed, it can be said exactly that there is no problem in instruction if there is no identifiable difference between present learning and desired learning.

It follows that an instructional program is a gap-closing plan. It is inconceivable that a school can work toward a goal except from some fixed beginning point. Without it, the situation is equivalent to trying to get to San Francisco from an unknown location. Random behavior is all that is possible unless a point with a known location relative to the goal can be found. A school system which cannot describe the learning gap it is trying to close will choose instructional programs at random. The answer to the familiar question : "Change for What?"must be "Change to close known gaps in learning." Constructive change in instruction is the choice of a gap-closing plan better than the one currently in use.

Historically, the majority of schools have not even attempted to define instructional goals sharply. Far more effort has gone into the description of learned behavior through the construction and use of achievement tests. However, the customary use of such tests at the end of instruction rather than at the beginning(and throughout)has meant that teaching is not typically directed at identified learning gaps. Rather, teaching has had a tendency to be a set of prepared signals broadcast to an assorted set of receivers, many of which are in unknown stages of unreadiness or disrepair.

There is ample evidence that instructional change has been extremely random in the past and has often been undertaken for reasons having no discernible connection with theclosing of learning gaps. The blame for this cannot be laid solely to classroom teachers and to schools. As yet, the profession has been unable to provide solid evidence of connections between given ways of teaching and given results in learning.

While the pace of instructional change has been accelerated, random behavior by schools continues about as before. Here and there, notably in the case of programed instruction, there is developing a concern for the more precise formulation of control loops which could guide change in education with more exactness.

Goal Shifts as a Source of Learning Gaps

A gap can occur because learning begins to fall short of the present goal or because -- and this is of great significance -- the goal is pushed out beyond present learning. It has been the moving of the goal line rather than failure to play the game that has caused the great new demands on staffs of our schools.

In general, goals are set for any institution by the external system which controls and supports it. Institutions are variously capable of sensing the demands from the external environment and variously equipped to respond. The institutional staff which would control what happens to it -- that is, engage in planned change - must be alert to the shifting demands of the external control and support system. If it cannot suppress or modify those demands, it must reallocate available resources or seek new resources to respond to them. There is no question about the obligation to respond; the only alternative is to be relieved of one's functions.

The determined effort by leading individuals and great organizations to build a professional spirit during the past three or four decades appears to have generated among school people a strong desire for independence from public control. Many teachers appear to resent pressure from the outside and seem to feel it unprofessional to respond. While this is a defensible position where professional knowledge is superior, as in teaching techniques and instructional materials, it is untenable when the question turns to goals and values, where the professional cannot claim special qualifications beyond those of the public. When the profession is sluggish about responding to goal shifts, initiative simply passes into other hands.

A Control Loop for Planned Change.

Planned change in the sense of timely, systematic, constructive change by the school staff cannot be accomplished except under the following conditions:

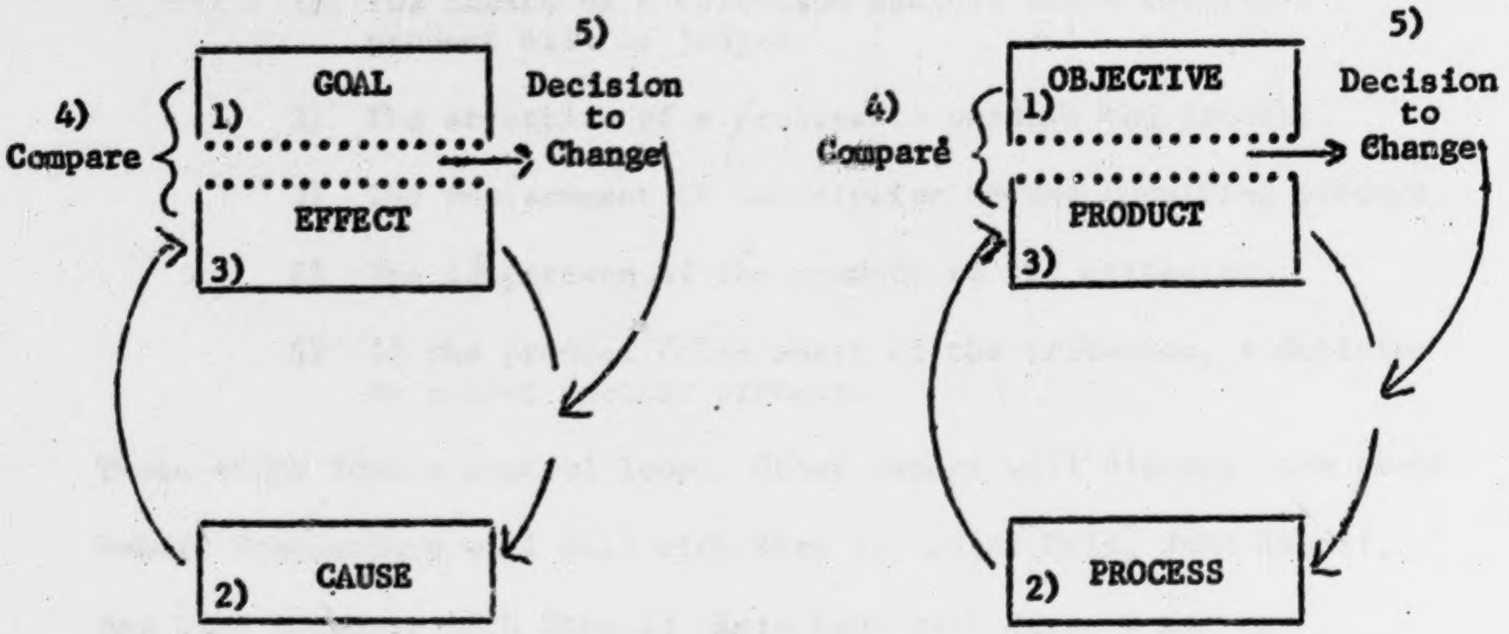
1) The learning goals of the school are acceptable to the external control and support system -- the public, in the case of a public school.

2) The learning gaps -- especially those created by shifts in goals -- are located by the staff before they are located by the public.

It seems entirely evident that instructional programs will be injected into the schools from the outside whenever instructional problems are allowed to reach a critical level in the minds of the outsiders.

Orderly control of instructional change, like orderly control of any process, requires several steps: (See Figure A)

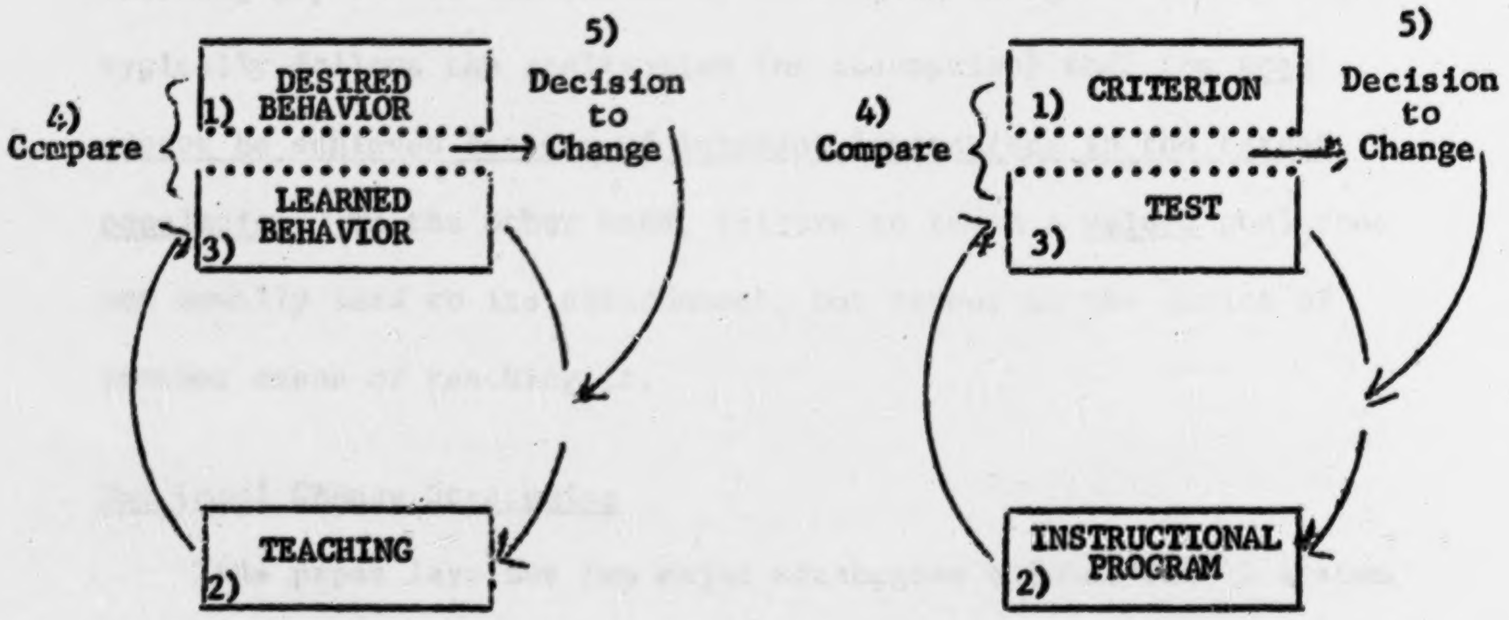
FIGURE A



In its most general form:

Or:

GOAL
1)
4)
Compare
5)
Decision to Change
EFFECT
3)
CAUSE
2)
OBJECTIVE
1)
4)
Compare
5)
Decision to Change
PRODUCT
3)
PROCESS
2)



Or in terms of instruction:

Or:

DESIRED BEHAVIOR
1)
4)
Compare
5)
Decision to Change
LEARNED BEHAVIOR
3)
TEACHING
2)
CRITERION
1)
4)
Compare
5)
Decision to Change
TEST
3)
INSTRUCTIONAL PROGRAM
2)

1) The choice of a criterion against which the final product will be judged.

2) The selection of a process to produce the product.

3) The measurement or description of the resulting product.

4) The comparison of the product to the criterion.

5) If the product falls short of the criterion, a decision to select another process.

These steps form a control loop. Other papers will discuss each step: Robert Brackenbury will deal with Step 1; Edgar Dale, John Rowell, and Glen Heathers with Step 2; Esin Kaya with Steps 3 and 4. (Step 5 is not singled out because it simply means a return to Step 2 to start again.)

Perhaps this is the time to interject the observation that a learning gap can be eliminated by abandoning the goal, a move which typically follows the realization (or assumption) that the goal cannot be achieved because of inherent limitations in the target population. On the other hand, failure to reach a valued goal does not usually lead to its abandonment, but rather to the choice of another means of reaching it.

Two Local Change Strategies

This paper lays out two major strategies a local school system might use to bring about change in its instructional program after it has identified shortcomings in the learning of its students. Both are elaborate. In choosing to deal with change strategies available to those inside a school system, it ignores a panoply of forces in the outside school environment which are far more powerful than any which can be generated within the school. With that caveat clearly in mind, we proceed.

The major strategic decision for the local school system is whether it will invent a new instructional process or will adopt one invented elsewhere. Here the main road forks.[1]

Local Invention - A Set of Conditions

If the school system is actually to invent a new instructional program, it must work out a novel configuration of the building blocks dealt with elsewhere by Edgar Dale, John Rowell, and Glen Heathers: Teachers, pupils, content, materials, methods, times and spaces. To alter the individual components, or the mixture of them, or both, the school must draw together a cluster of able people and surround them with the conditions conducive to invention.

Few school systems are naturally rich enough in resources or free enough in atmosphere to provide the necessary hothouse conditions. Faculties are so heavily burdened with the duties of operating current programs that they cannot simultaneously work out better ones. Thus the school system seriously intending to develop its own innovation must deliberately create an invention setting, the ingredients of which appear to be these:

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[1] There is a third branch, most people would assert, called adaptation. Adaptation, in the conventional wisdom, represents the best of the other branches, being as it were an ingenious blending of invention and adoption. It is almost universally recommended and most schools claim to use it. My own observations have been that it is indeed a third pathway, usually laid out by wandering aimlessly back and forth between the other two, a pathway filled with trees and underbrush. Most adaptation, as I observe it, is not so much a shrewd redesigning of an outside program to fit special local contours as it is a matter of knocking the corners off trying to get it through the doors of the school. What gets inside looks like what the school was capable of understanding and reproducing -- its impressions of the innovation, so to speak -- a poor copy rather than an improvement over the original. In any case, adaptations can be understood as the invention of modifications in what is being adopted and will not be treated separately.

1) A group of highly intelligent people with differentiated roles.

It seems clear that shared goals, cross-pollination of ideas, mutual support during failure, reinforced exhilaration during success, the convenience of a sympathetic but critical hearing from fellow workers, and the creation of a cadre devoted to the spread of the ultimate invention are more than sufficient reasons to create a group rather than to rely on individuals working separately.

Intelligence, energy, and orientation to forces and trends outside the locality, as well as competence in the opinion of the school staff, are attributes of the inventors which tend to assure quality in the innovation and eventual acceptance of it in the local system.

On the team there should be people who can perform the various tasks outlined below. One special role is that of performing translation functions for other members, as for example by suggesting how a scholar's knowledge can be converted into a teacher's tool. Certain of the change roles called for by Egon Guba and David Clark are exactly suited to an invention setting.

A temporary group composed of people who do not normally work together as a project team breaks any fixed circle of expectations and frees ideas and talent to emerge more easily.

2) A limited problem.

Unless the problem area is narrowed so that a definite problem emerges which the group can solve with the time, talent, and funds available to it, success is not likely.

3) Available time.

Considerable working time must be allowed if a true innovation is sought. So little working time is allotted to most school groups attempting to innovate that they usually resort to adopting what already exists, making occasional modifications if time allows.

4) A special place in which to work.

The choice of a work setting somehow separated from the familiar working environment enhances the sense of specialness which a successful working party always seems to develop. The creation of a temporary home, whether or not it is geographically distant from the accustomed locations of the members, reinforces identification with and allegiance to the group, underlines the importance of the task, and helps remind the members that new behaviors are expected of them.

5) An expected product.

Without in any way predetermining the nature of the final instructional program to be produced, it should be clearly established that the working party is expected to come up with a definite body of school practice which can be used to solve the problem. A clear expectation of a usable product serves to increase task orientation and add a certain sense of urgency.

6) Fundamental knowledge of human behavior and of subject content to be taught.

It is extremely valuable to infuse into an invention setting fundamental knowledge on which instructional techniques can be based. Principles from psychology, sociology, anthropology, and other behavioral sciences give the innovating group a broad platform on which to erect pedagogical methods. If the group is to formulate something truly new, it will come from basic principles underlying instruction as well as from their personal experience as practitioners. A point to remember is that there is always more knowledge available to underpin the innovation than there was to undergird current programs when they were originally invented.

If the working party is placing subject content into its new program, it is essential for it to have a deep knowledge of the subject selected. There are two reasons why the content of elementary and secondary curriculum grew old and stale between 1930 and 1950: the passing of textbook authorship from content scholars to pedagogical scholars and the production of local curriculum guides without benefit of help from content scholars. The sharp insularity which resulted cut lower schools off from the frontiers of content scholarship and led in time to the curriculum reform movement discussed by John Goodlad. If locally-sponsored innovation is to compete with nationally-sponsored innovation, it must of necessity link itself to content scholarship.

Among the ways of making pedagogical and content knowledge available locally are these - listed in order of probable effectiveness:

a) Choosing scholars as members of the working party
b) Providing direct consulting help from scholars
c) Arranging for study in college courses or local workshops
d) Supplying professional literature

7) Proper equipment and materials

One characteristic of the schools in this nation which seems quite unlikely to change is the universal dependence of teachers on instructional equipment and materials to carry the subject content and often to guide the methods of their teaching. From this we can predict that a design team is entirely likely to express its ultimate invention in equipment and materials. It follows that the group must be given its choice of the components already on the market, and,more important, must be given the capability

for producing novel equipment and materials over the entire spectra of audio,visual, and printed media. Evaluative instruments are a special category of hardware and software which may be important to the team.

8) Knowledge of parallel efforts.

It is desirable although not essential for the innovation team to know how others are attacking similar problems. Duplication of errors can be avoided and duplication of correct steps made deliberate. Because parallel efforts are usually not detailed in the literature, travel to other sites is the only way to get full information.

9) Freedom to design almost any promising approach.

Any kind of restriction in an invention setting lessens the chance of getting a truly distinctive answer. Members of the working party inevitably bring to the conference table and the laboratory an elaborate set of assumptions about what kinds of inventions the prospective adopters -- who presumably are not all present -- would accept and use well. These assumptions grow out of ideas about the competency of proposed adopters, their attitudes toward change, the types of materials and equipment they would be willing to use, the time blocks and spaces in which they work, the maximum acceptable cost of the resulting program, and so on.

It is probably best for the working party not to be guided by such assumptions -- at least in the exploratory stages -- because it is always conceivable that a new program of superb character could be widely disseminated even if quite distinct from those currently in use. Moreover, as the work advances, accurate knowledge of conditions in the target situations can gathered and those elements of the new design which might later impede diffusion can be replaced by less expensive, more usable components.

10) Try-out situations.

The designers must be offerred locations in which the innovation can be tried repeatedly, redesigned if necessary, and tried again as a part of its actual invention. This kind of tryout must be distinguished from full-scale testing of the final program, which has another purpose entirely. This is laboratory testing in contrast to field testing. It will often involve tiny components, use rough pilot models rather than finished products, require short periods of instruction, involve less than full-size classroom groups, use working party members as teachers, be accompanied by immediate and perhaps elaborate evaluation, and in other ways look quite different from a test of the final program. It should be obvious that immediate access to classrooms with little or no advance notice is highly desirable.

11) The likelihood that the innovation will be used.

Most members of invention teams need to feel that if they design a useful program, a use will be found for it. Thus they should be told at the beginning that there is a prospective group of adopters who can benefit from what the working party designs and that dissemination of the invention is planned.

12) The prospect of personal recognition if the innovation is successful.

Among the ways of enhancing the expectation of recognition is to tell the invention group that the following arrangements can be made (if they are interested):

a) An opportunity for them to announce and present the final program to colleagues in the local school system.

b) A chance to take a leading role in actually disseminating the result so that other teachers can use it effectively.

c) An opportunity to describe the results at professional meetings and in professional journals so that recognition beyond the local school system is a prospect.

d) The opportunity to disseminate the program through commercial channels, with compensation through royalties when allowable.

It is important to present these as options to be exercised when the time is right; otherwise working party members may become fearful that premature display of their product may serve to discredit them.

For most school systems, it would be impossible to create such a set of conditions. And it is precisely for this reason that innovations born and bred at home cannot stand muster with the multimillion-dollar national programs like PSSC physics, SMSG mathematics, BSCS biology, and CHEM and CBA chemistry, which all sprang without exception from just such artificially created conditions.

Local Adoption - A set of conditions

Most school systems must adopt their instructional programs.[2] Depending upon the magnitude of the change, the following conditions appear to be necessary for authentic adoption and successful use. They are presented in rough chronological sequence. Some will have been accomplished already if the system is diffusing internally a program which it has itself invented.

1) An identifiable innovation.

The new program must be in a form which is identifiable, describable, and reproducible. An instructional innovation must be adopted as a body of practice. There may be profound principles or a great guiding spirit behind it, but unless it is reduced to behaviors which the adopter can learn, it cannot be successfully imported. Moreover, it must be in such form that those using the behaviors will almost assuredly produce the desired product as a consequence.

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[2] Adaptation, as indicated earlier, can be best conceived as the invention of modifications. It seems reasonable to believe that high-quality modifications can only come out of rich invention settings. To the extent that the school system adapts a program without providing such a situation, to that extent will it be hammering upon a well-engineered machine, blindfolded.

That is, the efficacy of the program must not be attributable to some mysterious quality lent to it by an esoteric group of developers. Adopters must of course become acquainted with the principles and spirit underlying the innovation so that they will not use it mechanically, but even intimate knowledge of the rationale is no substitute for an identifiable body of practices with which to carry it out.

2) Public acceptance

Public enthusiasm for the specific innovation is not necessary. (A particular innovation may not even have high visibility to outsiders.) However, while public neutrality is harmless, public opposition would in all likelihood devastate the innovation. Thus opposition must be prevented even if enthusiasm is not aroused. (It seems likely that the attitudes teachers themselves display toward the innovation and the reactions they thereby arouse in students are powerful conditioners of public opinion.)

At the same time, positive public attitudes toward the overall school program are necessary for continuing financial support. Thus the strategic problem is at least to neutralize public attitude toward the specific innovation while generating overall support for the school system. One way to build general support, of course, is to display specific improvements which are being made.

The public must be informed about a change so that it will not come as a surprise and arouse opposition for that reason alone. The customary channels of information such as newspaper reports, letters from the school, and PTA meetings can carry the limited information needed to prevent opposition to most innovations. A major change, however, may require the use of public meetings and special citizens' committees to help explain it.

3) Strong administrative endorsement.

If any principle is well-established, it is that a positive desire for the changeover -- not merely a neutral acceptance -- must be displayed by the administrative staff. In the best of circumstances, all the administrative levels which are visible to the target location will join in the call for change. (It is especially necessary that the call come from line officers in authority positions, not from staff officers such as curriculum coordinators alone.)

The ideal stance for the administrative staff is that the change must be accomplished but that all the resources at its command will be applied assiduously to easing the way for the change. A dramatic way of symbolizing this attitude is to have the school as an institution visibly take up part of the burden in such fashion as:

a) Spending unaccustomed amounts for staff travel to innovation sites.

b) Paying staff members extra for time spent beyond normal duties.

c) Closing school to arrange for in-service training.
d) Allowing salary guide credit for training received.
e) Supplying meals in conjunction with meetings.

Some of these steps are essential on other grounds, but they are recommended here for their special psychological value.

4) Balanced attention to the novel and to the familiar.

Probably the most delicate balance to be struck in the introduction of an innovation is that between pointing out its familiar elements and pointing out its distinctive ones. Familiarity with the ingredients of a new program paves the way for acceptance by assuring teachers that they can handle the innovation partly with existing skills. And yet if it is made to seem almost identical to what they are already using, there is no reason to change. Or if they do change, they may adopt only the familiar elements and ignore the very ones which make the innovation superior. The best tactic at the outset would seem to be the sharp delineation of selected familiar elements and the equally sharp delineation of novel elements. Then as the program moves into use, attention should shift almost entirely to the new ones.

5) Convergence of outside reference group norms.

Staff members belong to professional associations outside the local school system and to other outside groups which can grant them status and prestige. In addition they look for approval to outside agencies which are a position to judge their work, such as the schools which will receive their students subsequently or the employers who will hire them. Many teachers respond strongly to the values of such outside groups and agencies -- especially the more innovative staff members, who tend to be externally-oriented. If the innovation calls for behavior which the staff member thinks unacceptable to the outside group even if ardently endorsed by his own school, he will resist the innovation. Favorable opinions of the innovation by outside professional leaders, by colleges or other schools which graduates will attend, or use of the innovation by highly-regarded school systems should be called to the attention of prospective local users.

6) Early staff awareness and interest

Since information flows to the staff from many outside sources, it will not always be necessary for the local school to make teachers aware that an innovation exists. When it is, simple awareness can be established by printed material and by references in speeches. A favorable impression can be developed by showing how the innovation is in keeping with traditional local values - "Their philosophy seems to be like ours;" is convergent with the values of outside reference groups -

"Some colleges have expressed an interest in what they are doing;" is a somewhat familiar form of practice - "We have been using something similar;" and appears feasible - "It seems to be a practical approach."

At a later stage, actual interest must be developed. Here it must be shown that the innovation addressed to an area of learning in which the local school itself has located an unacceptable gap. A kind of "artificial visit" is needed. Longer printed or filmed descriptions can be used. However, the ideal form is one which makes further inquiry easy. Correspondence with the producers or with users will go a little way, but conversations are better. Speakers and consultants (preferably those who have worked as producers or users of the innovation) should be invited to speak and to discuss. The staff should be able to confront them in small, informal, semi-social sessions so that the credibility of the outsiders can be tested better than it can be from the audience.

It is at about this point that the staff will want to examine the actual instructional equipment and materials.

7) A sense of staff involvement

It is highly desirable to have the prospective adopters (or representatives they have chosen) join the process of inquiring into the innovation. The strategic problem is to assure forward movement while allowing the intended users to choose the exact route and modulate the pace. One useful tactic is to couple the prospective users in a group with others who already favor the innovation - including administrators, of course. Another is to supply a great deal of information to all the prospective users both about the innovation and about the plan of adoption, so they can feel sure nothing will happen before they have an opportunity to intervene. Another is to arrange specific opportunities for them to react as things proceed.

The chief questions in the minds of the intended users are likely to be "What _is_ the innovation?" "How will it affect _me_?" "Can I learn to do it" and "Will I be able to stop it if things go wrong?"

8) _The precipitation of a decision to try the innovation_ .

This is the great moment in the adoption of the innovation - events rise to this peak and trail downward from it. The chief question in the mind of the prospective adopter seems to be: "Is it designed for a setting like my own?" and "Can I make it work?"

It seems to be established beyond doubt that the best way to answer such questions is to have prospective adopters visit a site where the new innovation is in actual use. Certain conditions are necessary if the visit is to be fully effective:

a) There must be a minimum of artificiality and showmanship in the program being demonstrated.

b) Ideally the demonstration setting should be recognizable to the visitors as quite similar to the schools from which they come.

c) There should be no special features of the program which the visitors will regard as essential to success but as unreproducible at home. The presence of extraordinary teachers, elaborate equipment, abnormally high contact with university personnel and other expensive or unmanageable features will tend to convince visitors that the program is not for them.

d) It should be possible for visitors to talk to teachers and students as well as to sponsors of the program so that they can get the perceptions of those who must live with the program from day to day.

9) Testing program amended

Among the methods used to judge teaching success, pupil achievement test results rank high with the public, administrators and teachers themselves. Innovations which would reduce pupil scores on highly-regarded tests and thereby discredit not only the innovation but the teachers employing it, will arouse understandable resistance. Therefore, if a desired innovation does not coincide with school achievement tests, those tests must be made to coincide with the innovation. One alternative is to eliminate tests if none can be found to fit the innovation. Another is to continue the old tests to see how the new instructional program affects the results. In the latter case, teachers must be assured that any drop in scores will be attributed to the innovation and not to any lack of competency on their part.

What should be done, of course, is to locate or develop tests which will measure what the innovation seeks to teach. Substituting such tests for the old ones not only removes a barrier, it also introduces a compelling reason to adopt the innovation and make it work.

Tests administered by external agencies exert more influence on the school than local tests. It is especially important that these external tests accommodate the proposed innovation. If they do not and cannot somehow be changed, the staff must be told how the school proposes to deal with the pressures which may arise if students do poorly on external examinations because of the new instructional program.

10) Prohibitive regulations removed.

Regulations which might prevent - or appear to prevent - the adoption of the innovation must be amended, suspended, or otherwise lifted aside so that prospective users can see clearly that those barriers have been removed. Regulations of this kind come from authorities above the prospective users, often from the Federal or state agency which supports and controls the given instructional area. But they can come from the local school system, especially a rule-ridden large one.

Remember that a barrier is often perceived by the viewer even though it was intended by the sponsoring agency. The reading of non-existent prohibitions into regulations comes in part from misunderstanding and probably in part from a search for reasons to maintain the status quo. In any event, an early step in paving the way for the introduction of a novel program is a careful inspection not only of the regulations themselves, but of the local adopters' views of them.

11) Physical facilities modified.

Some innovations require more space; some require new subdivisions of old space; some require more flexible allocations of it from day to day. Whatever the situation, it must be made clear to prospective users that they will not be expected to cram the innovation into an unsuitable location.

12) Time schedules adjusted.

If the innovation requires more operating time, or a shift in time placement, or more flexible time scheduling, arrangements for accommodating it should be planned in advance.

13) Materials and equipment provided

Among the supremely critical conditions of successful innovation is the ready availability of teaching equipment and materials. The prospect of facing a class empty-handed is unnerving at any time even to the most skilled of teachers. The prospect of having to do it during the installation of a new program is unbearable. A virtually certain way to reduce anxiety is to have all teaching materials on hand in advance of initiating the new instruction so that teachers can become familiar with them and can be positively assured that they will be on the classroom shelves on opening day.

14) Extra start-up time

To change requires more energy than to remain the same. Allowing extra working time to those who are taking on the innovation by reducing normal duties somewhat or paying for additional work time is quite helpful during the very early stages. The relief is in part psychological; it need not be sufficient to cover all the new energy output.

15) Initial staff training.

Of all the steps in adopting an innovation, the most consequential one is training the staff to conduct it. This is the key to success, an inescapable requirement of authentic adoption.

Unless new teachers who have been trained elsewhere can be hired to mount the program -- which becomes increasingly possible with the growing number of national Institutes -- the local school system must arrange for the training. Novel content as well as novel pedagogy must of course be taught if the innovation demands both.

It seems that training may be given successfully either before or during the introduction of the program. There is some reason to believe that content might be taught as well or better beforehand but that teaching methods are best interspersed with classroom practice. It also appears to be true that content may be taught through reading or standard courses, whereas methods should be taught in authentic workshops rather than in formal classes.

In the best circumstances for teaching pedagogical skills, the teacher of teachers knows more about the innovation than those he is re-educating and has himself succeeded in using the program with children. Teachers learning the new approach should use it with their own students over a period of weeks or months and meet periodically with colleagues and outside experts to discuss their classroom experiences. Help should always be on call. It seems quite clear that guided practice over time is the only way to convert an appealing instructional idea into a living body of skills.

All the equipment and materials teachers will need to teach the program should be employed by them during their training.

If the program is to be used by a given group in a particular school, all members of the group should probably be trained at the same time. Otherwise, as indicated earlier, polarization of opinion around user and non-user groups may occur and inhibit diffusion.

16) Continuing Staff training.

Turnover in school faculties is so high that in-service training in the new approach must be given continuously. Otherwise the innovation can drift out of the schools along with teachers who leave.

Moreover, periodic refresher work is good for those who remain. Courses and workshops are probably less appropriate for this purpose than active supervision of the program coupled with periodic discussion meetings among those who employ the aging innovation.

17) Trial before final adoption.

Some form of trial before permanent adoption serves as a final reassurance to the staff that the ship can still return to shore if the voyage seems doomed. There are two major forms the trial can take: 1) pilot use in a few selected settings, or 2) universal temporary adoption.

The pilot plan is less visible to outsiders, less expensive, more manageable, less upsetting to the staff, and more likely to succeed (if the settings are hand picked). Its chief drawback is that opposition has ample time to develop and become consolidated so that the innovation may become "contained" in the pilot settings. This can be avoided in part by having the staff choose the pilot users to represent it in the trial. Thus they do not become elevated through other means such as administrative appointment and thereby become targets for staff resentment.

Universal temporary adoption does not make apparently invidious distinctions between those chosen to make the maiden voyage and those left on shore, gives everyone a chance to judge for himself, accentuates the urgency of change, gives teachers company during difficult times, and begins the universal installation of the innovation. Its chief drawbacks are expense, severe logistical problems, the risk of highly-visible failure, and the probability of low-grade but widespread complaints. The risks can be reduced considerably by very careful planning.

Pilot trials would appear to be best for elaborate, expensive innovations demanding a high level of skill; temporary adoption would appear to be best for innovations which are the opposite or which are prototypes of innovations scheduled for widespread adoption, when practice in a new kind of instructional skill is more important than the success of the specific innovation.

A Flexible Force to Promote Innovation.

To introduce a new instructional program requires more effort than to maintain it once established. (The extra amount of attention, time, and money need not be large in absolute terms but needs to be large relative to customary effort.) The need diminishes once the program becomes operational. Consequently, it is desirable to have a kind of flexible force which can be shifted from area to area of the school system as innovations are introduced at various places. When the fledgling program is no longer in need of special aid, the elements of that aid can be moved to another location to initiate further change. However, aid should be tapered as the program puts down roots rather than removed suddenly. The abrupt withdrawal of any ingredient -- even a no-cost one such as administrative attention -- will tend to disrupt the success and the spread of the innovation.

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AN EXAMINATION OF POTENTIAL CHANGE ROLES IN EDUCATION

David L. Clark and Egon G. Guba

Section I

A Logical Structure for Examining Change Roles in Education

This paper will propose a classification schema of processes related to and necessary for change in education. Through an explication of these processes, the authors will attempt to analyze extant and projected change roles in education.

The logical structure presented in this paper grew in response to years of frustration in trying to talk about the change process in education in global terms. How many articles have been published in education bemoaning the research reports which have been gathering dust on library shelves instead of influencing school practice? It seems to us that such disuse is probably appropriate since most research, even that which can be defended from a scientific point of view, has little to say to practitioners. And why should it? Research is conducted to advance knowledge and not directly to influence practice; it has to be evaluated on its own terms - terms of internal and external validity. But researchers are being castigated for not tackling "real problems" while practitioners build up guilt feelings because they are not using research to make decisions. That this dilemma has practical and negative impact on men working in the field is neatly illustrated by Miles who noted that Richard Suchman (and his "discovery method") was on the one hand labeled "a Messiah" by some researchers and conversely belabored as a would-be curriculum developer by curriculum people.[1]

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[1] Matthew Miles, "Some Propositions on Research Utilization in Education." Discussion document for AERA Committee on Research Utilization, March 23, 1965, p. 13.

The genesis of this dilemma seems to us to lie in an oversimplification of, or ignorance of, the range of processes and functions which affect change in a social process field. Should public schools, "allocate an appropriate proportion of their annual operating budgets - not less than one percent - for the support of research, experimentation, and innovation," as recommended by the NEA Project on Instruction?[2] The answer to that question appears to depend, first, on what those terms mean, and second, on how public schools will be related to other change agents and change mechanisms in education. It is possible and reasonable to argue that operating agencies in a social process field, i.e., schools in the case of education, should have internalized goals which relate directly to self-improvement of the operating system. If this is an acceptable proposition, the objective of advancing knowledge in the social process field as a whole, i.e. research, would appear to be inappropriate to the school, but formulating a new solution to an operating problem, i.e., invention, might be appropriate if other agencies and individuals were not mobilized to provide this service. The function most appropriate to the school, however, would seem to be trying, installing, and institutionalizing changes which have an efficacious impact on the system, and the "research-like" emphasis of the system's activities in accomplishing this function might be described with a term such as "operations research" or "quality control."

Many individuals have begun to recognize that something or someone is missing in our thinking. Miles illuminates this point by attempting to specify divergent research utilization roles, e.g., the engineer, the field tester, the quality control man, the county agent (its equivalent), and the home demonstration agent (its equivalent).[3] The same effort was made by Kimball Wiles in his presentation to the ASCD Seminar on Strategies for Curriculum Change when he allocated such functions or processes as basic research, field testing, and evaluation to agencies outside the school system, and stated that, "Innovation occurs outside the school system. Diffusion and integration occur within the system."[4] At the same session, Ronald Lippitt talked about the "gap between new knowledge and educational engineering," a phenomenon he refers to as the retrieval of expertness.[5] The call for the educational engineer, the translator, the middle-man, has become common in educational meetings and publications.

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[2] National Education Association Project on Instruction, Schools for the Sixties: A Summary of the Report of the NEA Project on Instruction. Washington, D.C.: National Education Association of the United States, p. 5.

It is toward this same area that we have been directing our thinking. If it is true that the relationship of various processes and functions in the change process in education have been oversimplified, what concepts serve to describe the evidently more complicated relationship adequately? If it is true that we need a new breed of middle men or organizations; what is it that they are in the middle of? Figure I represents our best effort to date to explicate this middle ground and these more useful concepts, and will form the basis for the remainder of our discussion in this paper.

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[3] Op. cit., pp. 12-13.

[4] Kimball Wiles, "An Historical Look at Educational Change Processes," (A summary prepared by The Center for the Study of Instruction), Washington, D.C.: National Education Association, 1965, p. 3.

[5] Ronald Lippitt, "Roles and Processes of Curriculum Change," (A summary prepared by The Center for the Study of Instruction), Washington, D.C.: National Education Association, 1965, p. 2.

Before examining this figure in detail, it is imperative that several caveats be called to your attention, and that certain basic terms be defined in order to make the schema intelligible.

The caveats are two in number: first, the schema has been constructed on logical grounds, largely unsupported, by empirical research. Second, the schema represents a uni-dimensional analysis of change roles, but of course such roles are influenced and determined by a multi-dimensional range of variables not entirely accommodated by the structure.

To return to the first of these limitations, there is indeed little empirical research to which the examiner can turn, particularly in education. Richard Carlson's studies of the school superintendent have examined one individual role in relation to one facet of the change process (adoption).[6] Henry Brickell discussed institutional roles relating to the change process in one state based on an impressionistic examination of how change occurs in schools.[7] The bulk of the change research in education, conducted over a 25 year span by Paul R. Mort and his students, concentrated on a single phase of the change process (actual adoption of an invention by a school district) and only incidentally referred to the role of change agents. Even where this latter work examines an institutional change role (e.g., state education agencies), the data are nearly impossible to use since Mort employed what Miles refers to as "common sense categories" unrelated to change research going on in other fields.[8] The most direct scientific lineage for the structure comes from attempts to classify the innovation process in other areas of change research, as for example, in rural sociology.[9]

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[6] Richard O. Carlson, Adoption of Educational Innovations, Eugene, Oregon: The Center for the Advanced Study of Educational Administration, University of Oregon, 1965.

[7] Henry M. Brickell, Organizing New York State for Educational Change. Albany, New York: State Educational Department, 1961.

The second delimitation is more severe and not unrelated to the first. A classification of elements in the change process is only one vantage point from which the question of change roles can be viewed, and taken by itself, does not account for other influential variables. For example, inventions have characteristics of their own. Chin has projected a five category classification of change: substitution, alteration, perturbation and variation, restructuring, and value orientation change.[10] It is highly likely that change roles would be altered drastically in relation to inventions requiring changes of these various types. Substitution (substituting one element for another already present) may well be typical of intra-system initiation. Alteration (minor change in what is already adopted) may be effected by fiat through a duly constituted administrative authority. Restructuring may call into play a complex interaction of intra-and-extra system individual and institutional change agents.

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[8] Matthew Miles, "Barriers to Change in Public Schools." Change Processes in the Public Schools. Eugene, Oregon: The Center for the Advanced Study of Educational Administration, University of Oregon, 1965.

[9] See, for example, George M. Beal, Everett M. Rogers, and Joe M. Bohlen, "Validity of the Concept of States on the Adoption Process." Rural Sociology, 22: 166-168, 1957.

[10] Robert Chin, "Models and Ideas About Changing." Symposium on Identifying Techniques and Principles for Gaining Acceptance of Research Results on Use of Newer Media in Education, Lincoln, Nebraska: University of Nebraska, 1963.

Another example of the alternate structures which influence change roles is provided by the monograph Change Processes in the Public Schools cited earlier in this paper. Carlson begins with a discussion of the change process oriented to functions much in the manner which will be employed in the present paper. Miles in the same Volume brings organizational theory to bear on the question of characteristics of the receiving system or target system. Gallaher assumes an anthropological view with particular emphasis on the role of the school administrator as advocate within a formal organizational setting. And Rogers picks up the question of the characteristics of the innovator. Any of those emphases could be assumed as the focus for discussing change roles. All should be considered eventually as research in this field gains sophistication.

Before proceeding, there are a few terms which will be used frequently, and we hope consistently, in the paper for which definitions should be provided. We will employ the terms change agent and innovator interchangeably and will mean, "an individual . . . consciously playing the role of an initiator with respect to an [invention] so that [the invention] may be accepted by another individual, or in an organization or group . . . ."[11] When referring to a group or institution playing the role of initiator we will employ the designation change mechanism. The terms target system or adopter will be used to identify, "an individual, group, or institution on which an innovator is working to seek acceptance of an [invention] . . ."[12] The term innovation will refer to the process of change, and the term invention will mean "(1) an idea or practice which departs from those generally prevailing among an aggregate of people who may be regarded as targets of change directed effort; or (2) a change in technology (a material object with definitions of its use)."[13] Further specialized definitions of terms within the structure should become apparent from the discussion of the schema following.

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[11] Harbans Singh Bhola, Innovation Research and Theory. Columbus, Ohio: School of Education, The Ohio State University, 1965, p. 4.

An Overview of the Schema

Let us turn, then, to a discussion of Figure I.

The first proposition underlying the schema is that all social process fields must utilize a wide range of processes or functions which take place as the field attempts to develop and subsequently integrate new knowledge into more effective practice. Through logical analysis and synthesis of empirical descriptions of the innovation process in other fields we have arrived at a simple four-phase division of these processes:

1. Research
2. Development
3. Diffusion
4. Adoption

These categories are, in turn, sub-divided into more discrete elements representing stages in several process phases.

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[12] Ibid., p. 6.

[13] Ibid., p. 12.

FIGURE I

A CLASSIFICATION SCHEMA OF PROCESSES RELATED TO AND NECESSARY FOR CHANGE IN EDUCATION

	RESEARCH	DEVELOPMENT		DIFFUSION		ADOPTION		
		INVENTION	DESIGN	DISSEMINATION	DEMONSTRATION	TRIAL	INSTALLATION	INSTITUTIONALIZATION
OBJECTIVE	To advance knowledge	To formulate a new solution to an operating problem or to a class of operating problems, i.e., to innovate	To order and to systematize the components of the invented solution; to construct an innovation package for institutional use, i.e., to engineer	To create widespread awareness of the invention among practitioners, i.e., to inform	To afford an opportunity to examine and assess operating qualities of the invention, i.e., to build conviction	To build familiarity with the invention and provide a basis for assessing the quality, value, fit, and utility of the invention in a particular institution, i.e., to test	To fit the characteristics of the invention to the characteristics of the adopting institution, i.e., to operationalize	To assimilate the invention as an integral and accepted component of the system, i.e., to establish
CRITERIA	Validity (internal and external)	Face Validity (appropriateness) --- Estimated Viability --- Impact (relative contribution)	Institutional Feasibility --- Generalizability --- Performance	Intelligibility --- Fidelity --- Pervasiveness --- Impact (extent to which it affects key targets)	Credibility --- Convenience --- Evidential Assessment	Adaptability --- Feasibility --- Action	Effectiveness --- Efficiency ---	Continuity --- Valuation --- Support
RELATION TO CHANGE	Provides basis for invention	Produces the invention	Engineers and packages the invention	Informs about the invention	Builds conviction about the invention	Tries out the invention in the context of a particular situation	Operationalizes the invention for use in a specific institution	Establishes the invention as a part of an ongoing program; converts it to a "non-innovation"

The second proposition of the figure is that objectives or goals can be stated discretely for each phase and stage and, consequently, that appropriate criteria can be established in terms of which each phase can be evaluated or assessed. This last point has caused confusion in every presentation of the schema. There are always those who contend that since inventions must be evaluated, one discrete stage in the process should be labeled evaluation. Evaluation is obviously appropriate but it needs to be conducted discretely at each stage of the process. For example, failure to disseminate information about a designed invention can occur, but while this failure can disrupt the process of innovation it has nothing to say to us about the invention itself, the design of the invention, or the research, if any, undergirding the invention.

The third proposition of the figure is that the change process is quasi-sequential from research to adoption. The seemingly sequential flow, however, can easily be over emphasized. Research may lead to the formulation of solutions to operating problems to be sure. However, the existence of operating problems may stimulate research, research findings may emerge from invention efforts, and inventions may occur which have shaky or non-existent research foundations. Research is a necessary element in the continued development of the change process in education but there is no linear relationship between discrete research projects or groups of research projects and individual inventions. Take, for example, the present pattern of in-service education for teachers in this country. On the face of it, the effort to tie in-service development to "canned" master's degree programs has been a notorious failure. Enough is known so that a program of re-organization and vivification of the entire pattern of school district-university involvement in improving teacher behavior in-service could be mounted today and demonstrated six months from now. The rationale supporting this improvement effort (i.e., invention) would involve not so much research as the application of well-known practical principles of formal organization. True, the application of research on teacher characteristics to the design of new experiences for practicing teachers would be a practical long term strategy for continuing improvement, but marked improvement could be made immediately with little or no reference to a specific base of new knowledge. This is simply to say that the processes being described are inter-related and mutually reinforcing but the relationship is looping rather than linear. Each phase has an existence of its own which does not depend solely on what precedes or follows it.

The Research Process Phase

This is the one phase which, in the schema, is not divided into stages. Such a division could be accomplished through the application of conventional classifications of research, e.g., basic-applied, or through a classification based on the objectives of research, e.g., to describe, to compare, to conceptualize, to test.[14] There seems to be no necessity to do this, however, since a single objective, "to advance knowledge," covers the various stages which could have been used further to define the phase. Research provides the basis for invention, in a general sense, but the only criteria which can be used to assess research are internal validity - the extent to which the hypotheses are tested or the questions are answered unambiguously, and external validity - the extent to which the findings are generalizable to the population required by the hypotheses or questions being considered. This may be a mild over-statement of fact since questions of significance can be raised in relation to the problem being studied, but it serves to illustrate the point that research must be assessed in its own terms. "Did the research, in fact, advance knowledge?" is a question which can be answered without reference to whether the research affected practice. A "no" answer to the second question probably tells you nothing about the research. It may illustrate simply that development and diffusion mechanisms were not functional in the field in which the research was done. Often this has been precisely the case in the field of education.

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[14] Egon G. Guba and David L. Clark, "Types of Educational Research," Chapter IV in William J. Ellena and Bruce Biddle (Eds.), Research and the School Administrator, AASA, in press.

The Development Process Phase

This phase involves two stages - invention and design. Invention is defined as the formulation of a new solution to an operating problem or a class of operating problems, e.g., team teaching as an antidote to some of the difficulties of the self-contained classroom unit. As Brickell notes in his monograph the conditions conducive to invention are quite different from those required by research.[15] It is equally true that the criteria which can properly be applied to these two functions differ sharply. On the face of it, does team teaching appear to be an appropriate attack on the weaknesses of elementary school classroom organization? Is there face validity in the idea?

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[15] Op. cit.

If one assumes that the teacher's lack of knowledge in a variety of fields is the basic weakness in the self-contained classroom, then team teaching appears to have face validity as an invention. What is the best, rough estimate one can obtain of its viability? If it increases school costs by 500% it probably won't go any further. What is the best first estimate one can obtain of the breadth of its impact? Is it worth pursuing in terms of potential significance to education? These are admittedly gross criteria but it is our contention that they should be. It is certainly better to err on the side of permissiveness at the invention stage than to cut off good ideas because they cannot immediately be proven to be valid and viable.

A "raw" invention is typically unusable in a practical sense. To discover a chemical which retards the development of mold in bread is one thing; to incorporate it into the process of producing and marketing bread is another. It is the design or packaging stage which orders and systematizes the invented solution into a package appropriate for institutional use. The best recent illustrations of attention to the design of an invention have been provided by the course content improvement projects of the National Science Foundation. The preliminary work of the Physical Science Study Committee (PSSC) invented a solution to an operating problem, i.e., updated substance for secondary school physics. Had the solution been left at this stage it is highly unlikely that it would have had impact on schools. After packaging in a usable and integrated form, however, it was ready for the processes of diffusion and adoption; and it has had a considerable impact on secondary education.

An even more telling example of the function of design in the innovation process is provided by standardized tests. It is doubtful if any area of educational research has had a greater influence on schools than that of tests and measurements. We contend that this is true precisely because the results of this research were designed, in the form of standardized tests, for use in the school setting. Had the results of this research effort not been engineered in the form of group tests, schools could hardly have been expected to do this for themselves, and the relevant content derived from these studies would now be summarized in a chapter of an undergraduate teacher education text on "characteristics of students."

Considerably greater precision can be brought to bear at this stage of development in establishing criteria and evaluating the product than was true at the invention stage. The pattern of evaluation typically followed is called field testing; its intent is chiefly to assess the feasibility of the design in an institutional setting, the generalizability of the design to diverse institutional settings, and the performance of the design, often relative to an existing design. Ideally, this field testing follows a period of intensive, small sample evaluation which the designers or engineers have conducted during the period when the design was taking shape. In a crude sense, this is comparable to the process employed by industrial engineers who seek naturalistic or uncontrolled settings to field test designs which have shown promise through controlled testing patterns, e.g., driving an auto whose components have been thoroughly laboratory tested across the country to determine its performance under "real" conditions.

The Diffusion Process Phase

The first stage of the diffusion phase, dissemination, is concerned with creating widespread awareness of the existence and general nature of the invention among practitioners. When properly carried out, dissemination increases the number of options available to the professional from which he may choose in practice. The criteria which can be applied to dissemination are essentially communication criteria: pervasiveness, the extent to which information has reached the target system; intelligibility and fidelity, the extent to which information has arrived in understandable and non-distorted form; and impact, the extent to which information has affected the behavior of key targets. Note again the self-contained aspects of this stage in the process. The stage can be assessed in its own right. The process of dissemination does not purport to effect change in schools but only to create widespread awareness of the existence of an invention.

The stage of diffusion labeled demonstration is more apt to be misunderstood than any other stage because of the loose way in which this term has been employed in education, e.g., demonstration schools (usually meaning university sponsored and housed elementary and secondary schools), or demonstration exhibits (usually offering a testimonial to the effectiveness of a practice initiated in some institutional setting). In this case, the term means the provision of an opportunity for the target system to examine and assess the operating qualities of the invention. This implies interaction between the demonstrator or demonstration and the target system - a real chance for evidential assessment of the invention by a competent professional. Certainly a demonstration, if nothing else, must be credible to the assessor or it loses all point. This can only lead to the conclusion that our continued use of atypical schools such as Laboratory Schools as demonstration centers has been and is incredible. Convenience to the target system is a relative criterion and included only because innovation research in other fields has indicated that target systems will not go out of their way to avail themselves of demonstration opportunities.

Let us re-emphasize the criterion of evidential assessment. "Showing and telling" is not demonstrating in the sense in which the term is here employed. The end result of demonstration, to build conviction on the part of the target system, can only occur in a legitimate professional sense if the target professional can undertake professional assessment; and he can only do this if the demonstration provides evidence which can be examined thoroughly and critically.

The Adoption Process Phase

Assuming that the target system is convinced of the efficacy of the invention there should be an opportunity to try out the invention, without substantial fear of failure, in the context of a particular institution. This trial period is not a period of simple "trial and error" but time during which familiarity with the invention can be established and during which a basis can be provided for assessing the quality, value, fit, and utility of the invention in a particular institution. Several general criteria can be applied at this stage. Is the invention adaptable to the characteristics of the local scene -

does it have to be bought "whole hog" or not at all? If so, what impact will this have on local operations? Are there problems of feasibility not picked up in the earlier field trials? It may, for example, require a high level of professional performance in an area of marked weakness in the local system - a weakness which cannot be quickly remedied. How does the invention act in this naturalistic setting with these professionals? This criterion is comparable to the earlier performance evaluation employed by the engineers who originally packaged the invention, but here the interest is in the action of the invention in relation to the particular situational circumstances.

The trial stage has certain unique psychological properties that warrant its use even in cases where earlier field tests have left no doubt about the proper action of the invention in the local situation. The experimental air associated with trial has the same invigorating properties claimed by Stephen Covey for action research; participation in trial experiences may persuade many otherwise reluctant adopters. Further, the trial experience may provide a kind of vicarious involvement with the invention that psychologically compensates the adopter for his possible lack of involvement in earlier research, development, or diffusion phases.

The process of installation, or fitting the characteristics of the invention to the characteristics of the adopting institution, may be an exceedingly complex and time consuming stage. It may require substantial re-designing, extensive personnel retraining, or modification of other elements of the operating system which conflict with the invention. The criteria for evaluation are the conventional administrative criteria of effectiveness, the extent to which the invention accomplishes what it purports to accomplish in relation to the system's objectives, and efficiency, the extent to which these accomplishments can be achieved in relation to the system's available resources. The application of these criteria implies the operation of some pattern of quality control within the system which will allow for the measurement of impact of a change on the operating system. Without this quality control, any effective application of these criteria is nearly hopeless.

Finally, we come to the process of converting the invention into a "non-innovation" so far as the adopting system is concerned. This implies establishing the invention over an extended period of time and valuing and supporting it as a regularly accepted component of the system. Whether this stage of institutionalization is, in fact, a part of the innovation process is a moot point debated by innovation theoreticians but it is certainly a critical step in the process for the adopting system itself.

Section II
Change Roles in Education: The Contemporary Scene and Recommendations

Had this paper been written five years ago, or even fifteen months ago, the analysis it attempts would have been much simpler to accomplish. Organizational Stability was a leading feature of the educational enterprise. But that stability is now rapidly evaporating. The effect of the Elementary and Secondary Education Act of 1965 on the process of educational change through the establishment of regional educational laboratories, the revitalization of state education agencies, and the establishment of local "demonstration" centers is very difficult to assess. Hence the analysis attempted here is likely to prove invalid guickly if the organizational changes now only dimly foreseen nevertheless materialize with the speed of which they seem capable.[16]

Change Roles: The Process of Research

The traditionally institutional role in research on education has been filled by the college and university. The bulk of the research activity has been divided almost equally between the educationist, i.e., the researcher with a background in professional education, and the educational psychologist. Sporadic interest in the field has been evidenced by individuals with other disciplinary backgrounds, e.g., sociology, political science, economics. State education agencies, the Office of Education, and local school systems have served chiefly to perform a highly specialized role in this field, that of social bookkeeper. Efforts to operate serious research programs in these latter agency settings have resulted usually in a short flurry of activity and a long anticlimax of disillusionment.

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[16] A recent analysis of the changing structure of American education is provided by Burton R. Clark, in an article entitled, "Interorganizational Patterns in Education," in the September, 1965 issue of The Administrative Science Quarterly. Professor Burton suggests that, "At least in education, social forces are greatly increasing the importance of this area [i.e., inter-organizational patterns] . . . . Leadership is moving into the interagency compact, the limited alliance, the consortium, the grants committee, the federation." (p. 237). The authors concur with this analysis and suggest that it serves as a useful backdrop against which to view the emerging roles of change agents in this field.

This general casting of institutional roles in relation to educational research seems to us to be sensible and reasonable. In most social process fields, institutions of higher education assume the lead in "advancing knowledge" and operating agencies tend to absorb the social accounting function. However, the research production in this field has been weak and has not served as a substantial "basis for invention." It is not our intent in this paper to engage in a critical analysis of the field of educational research but there are certain role deficiencies which, we believe, have contributed to this situation.

First, researchers have always inhabited the periphery of the field of education. Cut off from dialogue with practitioners they have been poorly supported and lowly regarded. Research in professional schools of education has been considered a luxury and this judgment has been reflected in the training in research provided to practitioners. It has also resulted, with apologies to our research colleagues who cherish their independence, in a lack of organization for research so that research efforts have tended to be short run and isolated.

Second, the base of participation in research on education within the university setting has been far too narrow. Educational psychologists have very nearly pre-empted this field as a specialized professional undertaking of their own. Consequently, the substance of knowledge in education accumulates primarily in terms of one methodological and substantive orientation.

Third, operating agencies in education, e.g., state education agencies and local school systems, have never clarified their role in relation to research and have operated ill-conceived programs which neither added substantially to what is known about education nor served legitimate local administrative purposes. These programs, however, contributed substantially to a misunderstanding in the minds of practitioners concerning what research is all about and what it can and cannot do.

Fourth, research efforts in education have seldom extended beyond the scope and capabilities of a single institution except in the cases where one agency (generally a university) used another agency (generally a school system) for data gathering purposes. As a matter of fact even the concept of team research has been accepted slowly in this field, Educational research studies have been small, individualistic, short-term efforts with little follow-up (e.g., even the concept of replication has been nearly lost as a scientific tool in this field).

Fifth, foundations have assiduously avoided the support of educational research. While on the one hand repeatedly emphasizing the risk nature of their capital and the venturesomeness of their spirit, foundations have nevertheless found it best to adopt a "play-it-safe" policy. This attitude is strange indeed when one considers the relative ease with which private foundations could elect to support promising individuals or unique ideas in contrast to governmental agencies with their aura of public responsibility.

We are led by these considerations to make the following recommendations regarding research:

Recommendation #1 - Professional schools and colleges of education must accept the production of new knowledge as an objective equally as important as the training of professional personnel. To support this objective, operating agencies, and particularly the Federal government, must continue and expand the support of individual and institutional programs of research and research training. Educational practitioners will have to develop a new attitude toward the researcher and toward educational research as a career and must invite the participation of the researcher in the main flow of American education.

Recommendation #2 - If universities are to serve the chief institutional role in multi-disciplinary research on education, special programs and inducements will have to be offered to involve individuals from diverse disciplines in this activity. Initial instructions and guidelines from the Office of Education on the research training programs and regional educational laboratory programs indicate that the Federal government is attempting to encourage a move in this direction. Foundations, because of their broad-based contact with the University, could play a particularly vital role in this connection.

Recommendation #3 - Local operating agencies in education should abandon once and for all the notion that research (advancing knowledge in education) is a necessary and desirable program function.[17] In lieu of this rainbow-chasing, these agencies should concentrate on the use of research, evaluation, and research-like activities in serving vital local administrative purposes, e.g., quality control, social bookkeeping, and stimulation of the innovation process (e.g., action research). A vital program need for the entire change process can be served if this strategy is followed.

Recommendation #4 - The educational community should take full advantage of the funding possibilities offered by the U. S. office of Education's research and development centers[18] and regional educational laboratories. If such inter-agency compacts can be made functional, much of the "sting" in recommendation #3 for local school systems can be removed since these agencies can find a new and vital relationship to the university's research program. The utility of this inter-agency, inter-disciplinary approach has been exemplified by the curriculum development projects of the National Science Foundation, even admitting that these were quasi-research efforts which would probably better be classified as development enterprises.

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[17] This is a good point at which to enter a disclaimer. In discussing individual and institutional roles one must keep in mind that anyone or any agency can assume any role, no matter how far-fetched it may seem on the surface, if they wish to do so badly enough. Local school systems can and have operated basic research enterprises. Individual classroom teachers by sheer force of hard work have conducted occasional sophisticated research studies. The recommendations made by the authors represent what seems to them to be a reasonable role strategy. It is obviously not a God-given order of events (we simply make it sound that way).

[18] Parenthetically, it should be noted that the U.S. Office of Education's first efforts to establish research and development centers appear not to have been wholly successful as efforts to mount inter-agency and inter-disciplinary research compacts or systems. As a matter of fact, certain of the centers appear to be vehicles for supplying institutional research grants of the sort which have grown up within the National Institute of Health Program. This should not be allowed to become the pattern for this program and, to forestall it, the Office of Education might well consider institutional research grants as a necessary and useful extention of their research support program.

Change Roles: The Process of Development

If a single weak link can be identified in the innovation chain in education, it has been in the area of development. Why is worthwhile research sitting on the shelf? Because there has been almost no attention given to engineering it to the point where it was worth diffusing. The primary organizational mechanism for development has been whatever resources the local school district could divert from its regular operation to support curriculum development efforts by teachers. Colleges and universities have made a meagre contribution in the field through "service" operations usually housed in a unit called a bureau of field services; through the efforts of individual professors generally supported by local districts via consultant fees, or by publishers; and through spotty special efforts of the school study council variety. With singular exceptions such as the New York State Education Department's recently established Center on Innovation in Education the state education agency contribution to development has been limited generally to the modest production of syllabus guides and materials.[19] Without much doubt, the publishers and testers have been the primary development agencies in American education, providing a national program of instruction for the schools almost accidentally while the formally constituted bodies in education often criticized, but seldom ventured to fill, the vacuum.

This situation began to change about seven years ago. Prior to this time, the private foundations had begun to venture some capital in this field, as for example, the Carnegie Foundation's support of Biberman's mathematics program at the University of Illinois. Such a role seemed natural to the research-shy foundation, but despite the fact that all systems seemed to be "go" the foundation chose to withdraw from this arena and to concentrate instead on diffusion. In this latter phase their activities have been viewed with suspicion, particularly when diffusion was undertaken without previous development and evaluation. When the National Science Foundation instituted its massive programs of course content improvement in mathematics and science, development was formally recognized. The old era indeed, and private foundations became even less enamored of development activities.

More recently the Office of Education has followed NSF's suit and has extended these curriculum grants (albeit at a more modest support level) to other substantive areas. These first efforts were harbingers of a new day in organizing and supporting development efforts in education and the Elementary and Secondary Education Act (ESEA) of 1965 creates the opportunity to extend the development function to cover activities much more far reaching than simple course content improvement projects. The diverse patterns possible under Titles III and IV of the Act and the specific programs for regional educational laboratories and demonstration centers will almost certainly result in what Professor Burton typified as "the interagency compact, the limited alliance, the consortium, the grants committee, the federation."[20] We will not attempt to predict the nature of these relationships but we will present for consideration several recommendations which may make it possible for existing agencies to take advantage of the opportunity now presented to education to solidify this weak link in the chain of innovation:

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[19] For an interesting example of changing state education agency interest in the development process and evidence of a new role for local school districts in the process, the reader is referred to a recent publication of the New York State Education Department, Center on Innovation, "Title III Guidelines: Elementary and Secondary Education Act of 1965," and Norman D. Kurland, "Some Observations on Curriculum Development"--a mimeographed report by the Director of New York State's Center.

<ins>Recommendation #5</ins> - Colleges and universities must come to recognize development activities in education as a legitimate function of the institution similar to their development programs in engineering and agriculture. They must accept a role as one agency in an interagency complex attacking these problems and should probably be prepared to organize some type of functional unit to carry out this responsibility. Personnel need to be trained to fill educational engineer, field tester, and county agent type roles and totally new patterns of preparation will be required to meet this need.

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[20] See footnote 16.

Recommendation #6 - Local school districts should abandon once and for all the notion of "going-it-alone" in the development process while at the same time increasing many-fold their fiscal and personnel committments to the area of development. They should initiate and participate actively in inter-agency development compacts, and provide substantial released time for the best of their own personnel to be retrained as inventors and engineers and subsequently to perform as development team members in area, regional, and national projects.

Recommendation #7 - The Office of Education should press quickly for the establishment of a national communications network which can tie together the diverse components of the new regional and area development centers (including both the regional educational laboratories - Title IV and the demonstration centers - Title III). Early emphasis in the expenditure of Title III monies should be placed on development rather than diffusion since the success of any diffusion effort will be hollow unless the development phase is productive and substantial.

Recommendation #8 - State education agencies might well consider the example offered earlier from the New York State Education Department. Through coordinative and stimulatory activities these agencies can link together the Title III centers in their states into a development network which can tackle problems beyond the scope of any individual center. The state department might also consider employing technical consultants on various phases of development, e.g., audio-visual production, to assist local centers in their state.

Recommendation #9 - Private foundations should re-enter the phase of development. Their efforts would be much more welcome here than in the phase of diffusion, where their behavior is often suspect. Their assistance in opening up new areas (as contrasted with NSF's and OE's efforts aimed largely at refurbishing established areas) would be especially welcome.

Change Roles: The Process of Diffusion

The informing function of dissemination was the original and classical function assigned to the United States Office of Education. It has attempted to fill this role through employing specialists in various fields, issuing publications, and sponsoring and attending conferences. Similar dissemination patterns have grown up in state education agencies and professional associations while colleges and universities and local school districts have tended to assume that the job appropriately rested elsewhere and was being accomplished reasonably well. These latter groups supported the pattern by providing budget allocations to send staff members to conferences and to purchase publications.

The term demonstration has been used in such a different context in education from the way in which it is being employed in this paper that it can almost be classified as an "open role". In a sense, it has been pursued for the purpose of "informing" rather than "convincing". This would seem to be the case, at least, when one considers the role of demonstration schools, demonstration teachers, or demonstration exhibits. These vehicles were designed to stretch the imagination of teachers -- to let them know about other practices and activities going on in the country -- to serve as models to emulate. The one notable exception to this pattern is represented by the demonstration projects of private foundations. The activities of the Ford Foundation, for example, in teacher education, team teaching, etc., have had a convincing or propagating purpose but in most instances have seemed to fail on the criterion of evidential assessment. Up to this point, the so-called demonstration activities of the Office of Education have seemed to be diverted toward field testing as defined in the development phase rather than demonstration as the term is used here.

If one overall criticism can be directed toward the diffusion process in education it can probably be summarized by labeling it impersonal and undirected or unplanned. On the first count, there has been nothing similar to the county agent or demonstration agent and no mechanism similar to the experiment station. On the second count, no effort has been made to systematize and organize the pattern of conventional communication. At a more sophisticated level of criticism no strategy has been invoked to take advantage of what we do know about communication networks, e.g., the two-step flow of communication hypothesis, the clustering phenomenon.

We would recommend that:

Recommendation #10 - The Office of Education should accelerate the development of its Educational Research Information Center (ERIC) so that a single automated storage and retrieval system is available around which to build a diffusion mechanism in education.

Recommendation #11 - The regional educational laboratories and state education agencies should be conceived as arms of ERIC for this purpose (probably as satellite centers) and both of these agencies, in concert, should employ and provide to local educational institutions, field agents whose sole function is to make available to practitioners the most recent information on educational development activities. To assist in this endeavor the Office of Education should initiate and maintain a catalog of inventions which summarizes all such efforts in the country.

Recommendation #12 - The regional educational laboratories and demonstration centers (i.e., local school district centers) should be conceived and planned as a national network for the demonstration of educational inventions and as the "key institutions" for an expanded program of direct demonstration in local districts.

Change Roles: The Process of Adoption

In a real sense, the focus of discussion changes sharply at this point since there is no real question about role. The adopter or adopting system assumes the change role and the question becomes one of internal organization adequate to accommodate the role. Whether local school systems in this country have been or are now prepared to exhibit what Paul Mort called "adaptability" is highly debatable. If they are not, of course, the change process falls apart and attention to research, development, and diffusion becomes a farce.

First, let us recall that the recommendations to this point have called for a new and dynamic role for local schools. These are not agencies waiting passively to receive inventions concocted by experts for adoption by the so-called target system. This is an important differentiation in role and one which we wish to emphasize. Active roles in invention, design, and demonstration were posited and the fulfillment of these roles would establish a local setting for innovation which will be critical.

Now, if the district itself and its internal organization is to fulfill its change role adequately, the present situation must be markedly altered. The district cannot continue to be characterized by a "do-it-yourself" complex, trying to rediscover the wheel in local curriculum committees while the research arm of the district, if any, is diverted to status surveys and administrative data gathering. Neither activity (curriculum or research) is typically supported at a level which would allow for real progress. This will have to change and we suggest that:

Recommendation #13 - Each and every school system should affiliate itself as a member of an inter-agency compact (e.g., regional educational laboratory) for educational change, allocating necessary resources to become an active participant in the program of the compact.

Recommendation #14 - Each district should identify internally or employ high level personnel (master teachers) whose charge it is to serve as liaison between the district and outside change agencies, to mount and carry out demonstration and trial projects within the district, and to work with teachers and other personnel in the district who are engaged in installing and institutionalizing new programs and practices.

Recommendation #15 - A quality control center should be established in those districts large enough to justify its existence--others can accomplish this on an inter-district basis--to assess continuously the health of the system and the impact of changes introduced into the system.

Recommendation #16 - A development division should be set up (probably in lieu of the current office of assistant superintendent for instruction)[21] whose primary purpose

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[21] We are not unaware of the tremendous load of the line responsibilities now carried by such offices ranging from personnel recruitment to back-ordering. Obviously these tasks have to be carried out but not, we would contend, in the one office in the system where concern should be primarily for improvement rather than maintenance. In the same manner, we know that administrative data gathering is important but not as a function of the quality control center.

it should be to coordinate the development activities of the system and particularly to work on problems of operationalizing and establishing inventions.

Recommendation #17 - The much-abused concept of action research should be revitalized and recast as action research and development. In this instance, we are referring to the use of replications of research and development projects in the local district, involving classroom teachers, for the purpose of setting the stage for change in the system and insuring broad involvement in the district's program for change.

Section III
Summary

Figure I and the seventeen recommendations represent the summary of our ideas. However, we feel that certain actions noted in the recommendations can briefly be reviewed for emphasis and convenience. We wish, then, to reiterate our suggestions that:

1. Professional schools of education be encouraged immediately to establish graduate programs appropriate for the new roles called for in the changing process of change in education, e.g., educational engineers, quality control experts, educational field agents.
2. Local school systems be encouraged to redirect their efforts in research and curriculum to focus on their role as adopters in the process of educational change, and particularly, that they assume responsibility for these functions as exemplified through development and quality control centers.
3. State education agencies and the Office of Education be encouraged to view the ESEA of 1965 as a vehicle for establishing a strategy for educational change in this country, and take the steps necessary to prevent this legislation from becoming merely supplementary support to extant and inadequate patterns for change in education.

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GUIDELINES FOR SELECTING LEARNING ACTIVITIES AND MATERIALS FROM AUDIOVISUAL RESOURCES

Edgar Dale

All new developments in education--the ungraded school, the changes in the teaching of mathematics, science, modern languages, flexibility in class size, changes in curriculum content--have one common objective. They aim to help students learn more, learn it faster, remember it better, and use it more effectively.

Audiovisual resources are playing an increasingly important role in improving instructional practices and materials. To be fully effective, however, guidelines for such use are imperative, must be based on carefully formulated principles. Some of the guidelines presented below are appropriate for all instructional materials, some deal uniquely and specifically with the audiovisual field. They should be studied in connection with the guidelines on library resources.

Guideline No. 1

The task of the school is to arrange experiences for productive learning.

In the early stages of the education of the child many of these arrangements of learning experiences are made for him. However, as he matures he will increasingly become the architect of his own learning. He must then take the initiative in selecting, classifying, arranging and organizing his learning experiences. He must develop a facile mental filing system so that storage and retrieval operate at maximum efficiency. This is central in all education.

A key assumption by teachers, writers, and curriculum specialists is that we can grade instruction materials into 12 or 13 categories of difficulty, each of which requires a teacher for that particular level, whether it be the kindergarten teacher or a teacher of the 12th grade. Sometimes we make further divisions within a grade. However, the entire concept of grading experiences for effective learning needs much more careful scrutiny than it has yet received. This comment has specific application to audiovisual materials, which can cover a wider range of pupil understanding than is possible with reading materials.

Instructional materials must be so arranged that pupils are increasingly on their own and this means that learning experiences should be arranged for efficiency of use. The dictionary is a learning tool so arranged that we can quickly find the meaning of an unknown word. Thumb tabs may facilitate the ease of finding the word. No one would assume that we would intentionally make a dictionary hard to use. Rather, we make it as efficient as possible so that the minimum of time is spent in finding the word sought.

Similarly, careful attention has been given to the enhancement of ease in learning through the skillful organizing of encyclopedias and other reference materials, especially those developed for schools. The publishers make certain that the key topics taught in schools are included in the encyclopedia and amply explained. The maps, photographs, charts and diagrams are simple enough to be read at planned grade levels. The vocabulary is controlled so that the words used are either known by the student or are explained.

A thesaurus arranges words so that a student can quickly and easily find the synonyms, the nuances of words which he desires. Books of quotations are indexed to facilitate use. In short, those materials involving reference reading of one sort or another--the dictionary, the encyclopedia, the thesaurus or the book of quotations--are arranged to promote efficient use, hence productive learning.

No matter what the method of organization of varied teaching materials may be, it is clear that a student can work effectively only with a limited number of big ideas, a limited number of key concepts or principles. Therefore, we are constantly searching for those systematically organized, generative ideas which will enable the individual not only to meet present day needs but to meet the needs of the unpredictable future.

Guided inferring, learning by discovery, will be a key element in developing the independent learner. The teacher helps the student catch on to meanings, to create them out of his experiences. This does not mean, however, that we want the pupil to re-invent the alphabet. He does not need to discover everything. The student can be guided to learn in the same fashion that he learns from clear and easily read reference materials.

If experiences are to be guided for ease of learning, then we must systematically organize our resource material just as we have systematically organized reference material and the dictionary as a learning tool. The teacher must know the content of these materials, their understandability level, and must know how to use them in the classroom. It is likely, too, that mature use of all instructional resources will require a reorganization of these materials, perhaps with certain underlying themes as the principle of organization. We may find that a number of headings, such as transportation, power, communication, and the like, are fruitful new ways of organizing audiovisual and other experiences for effective learning. Guidelines, carefully formulated and applied, are a necessity in curriculum reconstruction, in the development of instructional materials.

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Guideline No. 2

> The schools have always lived in an atmosphere of genteel poverty as far as instructional materials are concerned. A revolutionary change lies just ahead.

The schools of America have long been underprivileged and underdeveloped. The teachers have not had the tools they needed and could use advantageously. Most elementary schools do not have librarians--many have no libraries. Existing libraries are inadequately equipped with the wide range of children's books now available. Excellence in books, magazines, and reference materials is not within easy reach of the average American child. Further, the elementary teacher herself as a child did not usually have easy school access to the best in children's books.

Even in the typical wealthy suburbs there may be a meager supply of certain audiovisual resources, overhead projectors, for example. There may be inadequate storage place for the available audiovisual resources and no person named to coordinate the work in the audiovisual field.

I note these facts at the outset since the changes just ahead in the availability of instructional materials will be revolutionary. Available federal and state funds will bring the best audiovisual resources to every school. Every teacher will have the teaching tools he wants and needs. We cannot yet provide high quality teachers for every classroom; we cannot yet equalize the teaching talents available. However, we can now equalize instructional materials. The most remote, poverty-stricken school in the United States will soon have access to the best.

What will happen as a result? The answer is clear. There will first be a period of fumbling, of false starts. Materials of instruction--some of them expensive--may remain unused. Teachers grown accustomed to "making-do," to meager instructional resources will not know what to do with their new-found opulence. The following guidelines describe some of the changes ahead in the audiovisual field and suggest ways in which we can make optimal use of new materials.

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Guideline No. 3

> We cannot effectively, systematically prepare programs for materials of instruction until we know what is to be learned, when and where it is to be learned, and how it is to be learned. We must match learning experiences with the learning outcomes sought.

To select and use audiovisual materials of instruction we must be far clearer than we are now in regard to the classification, the taxonomy of the terminal behaviors sought as a direct responsibility of the school. It may well be that in so doing we shall have to study the tasks to be learned outside the school, but our first responsibility is to specify the learning outcomes of school and college.

But haven't we always done this? Haven't we had courses of study, curricula, textbooks, films? Indeed we have. But much of our present problem springs from the fact that you cannot determine the means to be used for education unless you first determine the ends. We must avoid the statement of ends which are so general that it is impossible to draw needed subject-matter from them. We need a detailed analysis of the terminal behaviors sought. Ends in view must be accompanied by detailed subject-matter maps to enable us to reach planned destinations. To repeat: If we don't know the ends, we cannot specify the means. And if we do not know the desired terminal behaviors, we cannot determine the intermediate behaviors necessary to reach them.

This approach to curriculum construction was seen clearly by W. W. Charters and Franklin Bobbitt at least forty years ago. They asked: "What are the tasks, the jobs to be performed? How can we best organize learning experiences so that these tasks can be suitably accomplished? What differences in teaching approaches are required in the teaching of values, abilities, skills, knowledge, attitudes?" Their pioneering work has been obscured in the past years as we became understandably interested in nurturing "the whole child," and allowed ourselves to let our legitimate concern for the "whole" obscure an analysis and integration of the "parts."

We are now convinced that a "global" approach to curriculum construction is inadequate and that taxonomies of learning and teaching are helpful in seeing the great variation in objectives sought in our instructional programs. A study of the following taxonomies will show clearly the complexities of instruction and learning, and disclose the need for more rigorous study of learning outcomes as related to instructional resources.

Benjamin Bloom. *Taxonomy of Educational Objectives* Handbook I: Cognitive Domain (Longmans, Green & Co., 1956)

David R. Krathwohl, Benjamin Bloom, Bertram B. Masia. *Taxonomy of Educational Objectives*, Handbook II: Affective Domain (David McKay Co., 1964)

Arthur W. Melton. *Categories of Learning* (Academic Press, 1964)

Nolan C. Kearney. *Elementary School Objectives* (Russell Sage Foundation, 1953)

Will French. *Behavioral Goals of General Education in High School* (Russell Sage Foundation, 1957)

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Guideline No. 4

> Audiovisual materials are now conceived too narrowly by teachers, supervisors and administrators. They are not only electronic devices but include study trips, drama, maps, globes, models, photographs, bulletin boards, mock-ups, posters, dioramas, etc. Audiovisual materials must be seen as a part of a total communication process, the producing and consuming of messages.

The two-headed arrows on the accompanying chart show that in all communication there is always a producer and a consumer of ideas. In an ideal communication system we have a two-way flow: there is feedback and interaction. The producer and the consumer "transact" business with each other. The participants get into each other's shoes and become sensitive to the "other" person. They become "other"-centered as well as "self"-centered. There is empathy, a sharing of ideas and feelings in a mood of mutuality.

We PRODUCE Messages by:		We CONSUME Messages by:
Creating sounds by speaking, singing, playing a musical instrument, etc.	↔	Listening
Visualizing through photographs, paintings, models, sculpture, drawings, etc. (the plastic arts) Non-verbal gestures	↔	Observing
Writing or composing	↔	Reading

How do audiovisual materials fit into this communication pattern? It is difficult to neatly describe and classify them. Some educators make this category broad enough to include the picture book on the one hand and the newer self-instructional materials on the other. Others suggest a more rigorous classification and include only the materials that make use of pictures and sounds in presenting facts and ideas.

Further, within the broad area of audiovisual materials itself we may have various sub-categories depending upon the choice of a particular logical structure. We can, for example, classify audiovisual materials as audio, visual, and as audiovisual materials:

Audio Materials	Radio, language laboratories, tape and disc recordings.
Visual Materials	Illustrated books and self-instructional materials, pictures, photographs, flash cards, flip books, charts, maps, posters, bulletin boards, flannelgraphs, dioramas, mock-ups, filmstrips, slides, transparencies.
Audiovisual Materials	Television, films, videotapes, sound filmstrip.

Another way to classify audiovisual materials could be according to the following chart:

Speaking-Listening	Radio, language laboratories, tapes, recordings.
Visualizing-Observing	Television, films, videotapes, filmstrips, slides, transparencies, pictures, photographs, flash cards, flip books, maps, posters, bulletin boards, flannelgraphs, dioramas, models, mock-ups.
Writing-Reading	Booklets, self-instructional materials, charts, diagrams.

Sometimes audiovisual materials are classified as projected and non-projected. But no matter what type of classification used, the teacher and administrator must realize the wide range of provocative stimuli available in a well-selected library of audiovisual resources.

* * *

Guideline No. 5

> Effective use of audiovisual resources requires the thoughtful application of the concrete-abstract scale to selected learning experience.

Two educators have sharply influenced my thinking in the audiovisual field: William James and Charles Judd. James was a foe of cloudy, philosophical abstractions. When others talked about universals and essences, he said in effect, "Give me the concrete details." He noted that you can only see as far into a generalization as your knowledge of its details extends--a statement that Louis Agassiz had made earlier but less tersely.

Charles Judd, on the other hand, extolled the merits of "general ideas and general methods of intellectual attack." He wrote as follows in The Psychology of Secondary Education (Ginn & Co., 1927, p. 441):

> All the findings of psychology and all the experiences of the schools contribute to the conclusion that the highest achievements of the mind are its general ideas and its general methods of intellectual attack. Those forms of mental activity which are described by the terms "abstraction," "comparison," "analysis," "judgment," and "reasoning" are the unique and characteristic marks of distinction between the mental life of man and that of the lower animals. . .it is the very nature of generalization and abstraction that they extend beyond the particular experiences in which they originate.

I have tried to use the ideas of William James and Charles Judd in classifying all instructional experiences on a concrete-abstract scale. I have done so through creating a metaphor: the cone of experience.[1] In this cone I classified experiences ranging from first-hand, direct, purposeful experience at the base of the cone to fully symbolic representations at the apex. These symbols at the top of the cone bear no sense resemblance to the original experience. They are reminders of concrete experiences gained at lower levels of the cone.

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[1] Edgar Dale, Audio-Visual Methods in Teaching. Chapter 4.

If teachers really understood the importance and significance of the concrete-abstract continuum, they could and would revolutionize their teaching. They would revolutionize their teaching because they would then see the relationship between perceptual experience and conceptual experience. Furthermore, they would see the necessity for combining and recombining, for structuring and re-structuring all experience.

Audiovisual specialists understand the necessity for concrete experience but they are sometimes unclear about when the concrete experience is needed and when it is not. A few think that every lecture, every book ought to be fully visualized. But when a lecturer is talking about an apple he doesn't need to hold one up. As a matter of fact, our weakness in audiovisual instruction at the college level is the failure to help the professor visualize in a subtle, artistic way the complex concepts he is developing.

Usually we think of the concrete as something that can be sensed, touched, tasted, as having an existence in time or space, something you can point at. An abstraction, on the other hand, is something you can't see if you are looking right at it. It is intangible, untouchable, immaterial.

But this explanation is too simple. And it may conceal important truths. This apple before me is certainly tangible; it has odor, taste, and occupies space. But I also see the apple as an abstraction. I see it as a fruit, a member of a class. Further, an apple is an apple whether it is large or small, tart or tasteless, red or green. In short, it has appleness, a quality which cannot be eaten. It is invisible and intangible. It is an abstraction.

At first thought this kind of discussion may not seem very rewarding to teachers, yet the principles involved are basic to all education. Growth in education means learning to say more and more with less and less, preparing the learner to manipulate increasingly abstract symbols. A teacher is not usually criticized because he is not abstract enough, nor do we usually criticize him because he has been too concrete. The possibility exists, however, that teaching can be so concrete, so dominated by unreflective action that the learner gets stuck in the concrete when he should be working toward abstraction and generalization.

Further, the old injunction to go from the concrete to the abstract is incomplete. We not only move from concrete to abstract but we often return to the concrete when we apply a generalization. It is then no longer the same concreteness out of which the generalization came, but a new concreteness surrounded with a richer body of intellectualization, more relationships and connections. We see something new in the old experience. The learning process then is: Out of the richness of concrete experiences we draw off, we abstract certain characteristics which these experiences have in common. Next, we make use of these abstractions by generalizing them, by applying them to a concrete situation. So the pattern is concrete ⟶ abstract ⟶ concrete, and so on.

The brighter one is, the better he can abstract and generalize, use symbols for the concrete experience. The slow learner does this, too, but he has to start lower on the concreteness-abstractness scale, move ahead by shorter steps, and he can't go as far.

Teachers must become sensitive to the difference between the really hard, highly abstracted ideas and those which are easy and relatively concrete. Thus elephant, hippopotamus, fuselage, and fossil can be easy words for a first-grader. All are "concrete," can be pointed to, sensed. But concepts like decimal, zero, or charity are not concretely "sensed." They are abstractions. Their meaning does not jump out at you, but must be worked out, discovered, created. They are high-level abstractions in the same way that the proverbs, "Let sleeping dogs lie," "A bird in the hand is worth two in the bush," or "A bad workman quarrels with his tools," are concepts at the superior level as noted on the Stanford Revision of the Binet Scale. The highly abstract quality of the concept like "zero" is attested by the fact that it was invented only five hundred years ago.

Corey and Dale point out in Audio-visual Materials of Instruction, Forty-Eighth Yearbook, NSSE, Part I, p. 82, that:

> The learning that the school tries to bring about always involves some degree of generalization. What we try to do first is to teach boys and girls how to behave with a sufficient degree of specificity. We do what we can to cause them to think about and generalize from this behavior so that adaptations can be made to other similar situations. The job is to state objectives in enough detail to clarify what needs to be done, and yet to recognize the undeniable fact that life is complex and the schools cannot teach boys and girls specifically and concretely everything they should be able to do under all conceivable circumstances.

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Guideline No. 6

> Audiovisual resources can provide a wide range of understandable experiences, a skillful blending of verbal and non-verbal experiences.

The chief aim of most instruction today is to develop a verbalized, intellectualized approach to problems, the so-called cognitive aspect of education. Unfortunately, we are neglecting the area of values, the affective domain--the taxonomy of which was recently reported by Krathwohl and others.

The emphasis on the verbalized phases of human experience has sometimes led to an under-emphasis on those phases of human life which do not lend themselves to description in words or to easy testing. We are neglecting experiences which emphasize both intellect and the emotions--in music, the plastic arts, drama. Further, they may be considered as cognitive behavior since they, too, require knowledge and understanding.

Audiovisual resources make use of both the verbal and the nonverbal aspects of experience. Their range of symbolic representation is wide, one explanation of the appeal of great art to children and sophisticated adults alike. The audiovisual resources of the school, therefore, should include recorded music, access to motion picture classics, art exhibits and displays, the opportunities for first-hand creative experiences. Further, the museum, the theatre, and the concert hall must be used as instruments of education. We must not look upon reason and emotion as polar opposites. Both need and reinforce the other. The root of the word emotion means to move and this inner drive, this impulsion is at the heart of all action, reasonable and unreasonable. "Reason without emotion is sterile, emotion without reason is blind."

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Guideline No. 7

> Audiovisual materials have a high capacity for furnishing students with the elements of the rich experiences out of which important generalizations can be developed.

Let us probe the concept of rich experience and relate our findings to the task of selecting, cataloging, utilizing, evaluating, and producing audiovisual resources. These experiences, in my opinion, have these characteristics:

(1) They may have a strong component of sense experience. The use of first-hand, direct, purposeful experience, therefore, should be a sig-

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nificant phase of the audiovisual resources of a school.

(2) They have a quality of novelty, a freshness, a pleasant shock of discovery. They involve seeing ordinary experiences in unhabitual ways. Dewey has referred to art as "the intensification of the ordinary." Guidance in creative viewing is a necessity.

(3) Rich experiences may have a marked emotional tone. They are not tepid, or half-hearted. They are engaging, involving, and sometimes rigorously demanding.

(4) They are often the culmination or fulfillment of a series of experiences. Ideas begin to fit together. They do not merely accumulate, they are cumulative. They are integrative, not additive. To be educated one must not only have the facts but the cross references as well.

(5) Rich experiences carry with them a sense of personal achievement, an element of self-discovery, of curiosities aroused and satisfied, of creativity. You do not get the Eureka effect unless you have a well-stocked mind.

(6) And finally, a rich experience is one which can generate new experience. Many experiences are useful and help develop the maturing learner. But time is short and we need to give high priority to those experiences most likely to generate new experience--experiences that lead to other fruitful experiences. For example, skill in learning to read is a highly generative and rewarding experience. So is an understanding of the number system. Learning to communicate sensitively and compassionately would be high on our list of fruitful curriculum objectives.

We have been talking about evocative experiences as though teachers might willingly choose experiences which are meager and limiting in character.

Obviously given a direct choice none would do so. But some teachers and many adults have not themselves experienced the rich joys of learning, have neither instructed with delight--as Horace urged--nor been so instructed.

All of us are held firmly in the grip of unexamined habit. We do not live the examined life, hence our potentials are not tapped. Perhaps we have been deadened by routine, have not sensed the importance of zestful experience in our own lives and its necessity in the lives of learners. The writer is hesitant to claim too much for audiovisual resources as a generator of generalizations. Yet, as we study the characteristics of fruitful experiences, we see here a storehouse of potentially generative experience. The wise intervention of a teacher is sometimes necessary in order to help students mine these rich resources, but the possibilities for so doing loom large.

Indeed, it is one of the characteristics of audiovisual resources that they do present a wider range of stimuli--from concrete to abstract--than does the book. Our experience with television indicates that it is possible to cover a wide range of student abilities with a single program. But the mere presence of audiovisual stimuli does not insure that the responses will be thoughtful and fruitful of important generalization. Teachers must develop the wisdom and the skills for creating, discovering, and utilizing rich experience. To do so they must become sensitively aware of the present wastefulness, duplication, and repetitiveness of the school and college curriculum. Too many of the proffered experiences are unimaginative, unevocative, overemphasize rote and repetition, are not sharply focused on learning tasks, and they may not motivate at least one-third of the typical class.

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Guideline No. 8

> **The shift from a school dominated by the textbook and memorization as the chief teaching and learning method to a system in which widely varied and highly stimulating instructional materials are easily available will require a major rethinking of approaches to teaching and learning.**

The present system of education is, on the whole, a closed one. Few options are available to the teacher. Decisions concerning the textbooks to be used, the standardized tests to be given, are not generally in the teacher's hands. In the closed system the teachers and pupils know the typical learning requirements. They know when the day's work is done, what has been covered. If next year's teacher finds the students lacking in what they should have learned, last year's teacher has an alibi. "We covered it; they didn't learn it."

In the open system of education the pupils are not covering the ground, they are uncovering it. They are digging deep at a few points, developing useful generalizations and building lasting interests. The behavioral demands of the curriculum are met but the heavy pressure of the timetable is decreased. The students and the pupils are exploring, investigating. The curriculum brings challenge and response, the lure of the unexpected.

The teacher in a highly systematized, closed curriculum sees her role clearly. It is to present, explain, test, re-explain, and review specific learning. The desirable responses of the pupils are already defined and predetermined. Ideas are presented by the teacher and the textbook. The teacher gets a chance to talk a great deal and there is much verbal explanation and re-explanation.

The open-ended approach in teaching, however, requires skills that are not developed chiefly by typical textbooks or in the usual classroom approach. "What do you think?" becomes much more important than "What did the film or book say?" Learning by discovery is an approach that does not fit what we usually do in the typical class. When we use the discovery principle we search for and make use of the provocative problem situation, not the one that programs step-by-step what the learning bits shall be. We concentrate on asking better questions, questions which generate new interests and better understanding.

But you may say: "Why sharply divide the two systems? Can't we do both?" Certainly we must do some highly systematized, programed work in arithmetic, in spelling, in vocabulary building. But it must be in the context of independent thought, of learning by discovery, of increasing the maturity and judgment of the student. It must be a system operating within a broad educational design. The design should dictate the system; the system should not dictate the design.

The writer believes that the real revolution in education will come as the teacher shifts from the role of the technician with a myopic view of the future to that of the educator who has bifocal vision. The insightful teacher not only meets the day-to-day needs of students but he also has his eye on the road ahead and helps learners develop the maturity and judgment needed in an unpredictable society.

Too often teachers have become re-explainers of the inadequate explanations in the textbook. They have unwittingly become guardians in a correctional institution. The quarry the average teacher is stalking is too small, too scrawny, and the writer suggests that he go after bigger game, develop a more important, more powerful, more professional role.

The introduction of audiovisual resources should help a teacher become a briefer of an exploring party, a guide, a consultant, a wise older member of a learning team. Instead of being the victim of unorganized detail, overwhelmed by fruitless routines, the teacher must be the analyst and synthesizer of the learning possibilities in the situation in which she finds herself.

The redefinition of the teacher role as noted here will be no simple task. However, some may think that the present role of the teacher is a quite satisfactory and effective one. More than we may realize we have become the victims of routinized, unexamined habits. We teach in habitual ways because we have always done so. And most of our teaching has been geared to the reading and temporary memorization of textbook materials. These texts have not presented the rich detail, the dynamic, concrete experiences which are necessary for the development of fruitful generalization. As it becomes possible to present experiences with a far greater range on the scale of concreteness-abstraction, the role of the teacher becomes more complex, requires greater professional skill.

Unwittingly, some curriculum innovations have denigrated the role of the teacher, have tried to substitute learning materials for the teacher. This is a tricky problem to handle since we do want to develop the independent learner who can learn on his own. But we must not program the teacher out of the learning program. Instead we must see that she plays a more significant, important, professional role.

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Guideline No. 9

Teachers need special and continuing guidance in introducing major innovations in classroom practices.

Innovative practices in communication have developed faster than teachers' capacity to absorb them. To prevent excessive educational lag we must develop improved methods of in-service education.

We have overwhelmed teachers with decisions to be made regarding instructional materials and have not guided them in the art of choosing wisely. In the past 35 years, teachers have had to understand and use three new media of communication--the motion picture, radio, and television. In the late 20's and early 30's we talked about the instructional uses of motion picture; in the late 30's and early 40's some of us made the same speech on education by radio. And now we are talking about the instructional uses of television. How can we make needed instructional changes with a minimum of confusion and dislocation?

First, it is clear that these innovations--whether motion picture or radio or television--require teachers, supervisors, and administrators to learn or re-learn, to change their lives. The new media interrupt the smooth routines of the classroom and the school system. All three require a machine--a projector, a radio or television receiver. The machines have been relatively expensive as compared with other school costs.

Second, all three innovations have been introduced when the curriculum itself was undergoing change. They were introduced as sharply rising numbers of students graduated from the eighth grade, then from high school, now from college, and shortly, there will be a big bulge in graduate school enrollment. Further, international events have caused a rising level of aspiration, a desire to improve oneself and one's nation, indeed, the feeling of peril in not doing so.

Furthermore, the increase of sold, important information, has become so great that now we must be selective even if we mistakenly think only of information as the key outcome of education. We now have bibliographies of bibliographies and can't abstract new findings fast enough for use.

One approach to a solution or an amelioration of this problem of educational lag has been to invent new approaches to in-service education. Many grants under the National Defense Education Act have had this goal in view. A considerable number have used audiovisual techniques of communication to bridge the knowledge gap.

An interesting example of such a program is one recently completed at The Ohio State University under the direction of Dr. Catharine Williams of the School of Education. The project, "The Development of Packaged Programs Designed to Enable Groups of Teachers to Carry on Their Own In-Service Audio-Visual Instructional Programs," included the development and testing of a series of 10 kits of materials on the following topics:

Overhead Projection
Flat Pictures and Opaque Projection
Bulletin Boards and Other Displays
The Chalkboard
Filmstrips and 2" x 2" Slides
The Motion Picture
Recordings and Radio
Television
Programed Instruction
Community Resources

Each kit contains a leader's handbook and a packet with all the materials required to conduct the program. Most kits contain a color filmstrip especially made for that unit of instruction. Some include tape recordings. The handbook furnishes step-by-step guidance for conducting the workshop session, and includes bibliographies and other aids to help the leader of that session become her school's resource person on the particular topic under study.

These ten programs were tried out experimentally in the field, revised on the basis of the findings, tried out again, and revised a second time. The present programs, one hour in length, fit in well with in-service plans of the schools.

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Guideline No. 10

The systems approach involving educational technology requires specialized managerial skills.

A new approach to instructional materials is developing in schools, colleges, and in adult education. This is the integrated or the systems approach. Audiovisual materials are produced, distributed, and used as planned components of educational programs. Increasingly, audiovisual-verbal combinations are being developed as in the multiple-media classrooms which are included in new school and college buildings. Audiovisual materials may be used even in the testing phase of instruction.

No matter what instructional procedures are used there must be specialists responsible for setting up and facilitating the selecting, producing, storing, distributing, utilizing, and evaluating of instructional materials. How then shall we organize and administer a program which calls for the variety of both simple and complicated materials envisioned in the basic curriculum design described earlier?

Naturally different competences will be required of the audiovisual personnel operating at different levels of the educational system. At the regional or school system level we would require a new kind of specialist, the Educational Technologist. We visualize the Educational Technologist as having the following competences:

1. He should have a sophisticated grasp of the systems approach to education.

2. He should have an expert grasp of communication and learning theories.

3. He should be well-grounded in curriculum theory and practice and have understanding of the taxonomy of educational objectives.

4. He should understand the use of the computer, first as a tool for system building and system analysis, and second as a device for diagnosing, instruction, simulation, and evaluation.

5. He should understand programed instruction from both the theoretical and the programmatic sides.

6. He should understand the applications of communication theory to transmission devices of various kinds--the book, the motion picture, still picture, filmstrips, tape, videotape, and the like.

7. He should be sufficiently competent in the field of research design and methodology to develop and test instructional systems.

At the school level the functions required of the AV coordinator include phases of librarianship, curriculum-building and testing, administrative factors in ordering, cataloging, distributing materials, as well as production of materials.

Specifically, the AV coordinator will organize activities like the following:

1. Assist all teachers in the school in "audiovisualizing" their curriculum thereby providing enriching experiences to learners in the school.

2. Arrange in-service workshops on different aspects of instructional technology.

3. Keep an inventory of community resources - museums, film libraries, resource centers - that the school could use.

4. Build a library of frequently used films, filmstrips, and other AV materials.

5. Organize a well-stocked pool of audiovisual equipment easily available for teacher use.

6. Maintain a workshop to produce graphics, charts, and other visuals in small quantities for classroom use.

7. Provide training to teachers in the use of all equipment in the equipment pool and graphics and workshop. (Emphasis will be put on self-instructional techniques.)

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Guideline No. 11

Audiovisual resources provide a cafeteria of learning materials.

We have usually thought of books as the only source of excellent ideas. We have made literacy synonymous with ability to read. We have said that the best ideas in the world are to be found in a modern library. But the modern library must include excellence in varied media not just those in print. We realize, too, that the school and college must develop film literacy, literacy in the reading of photographs, literacy in evaluating great drama, literacy in critical listening.

This means that the school or college must select, catalog, distribute, and supervise the use of many types of materials, develop a learning resources center. The center will include films and filmstrips, recordings that will range from the best in music to lessons aimed directly to teach critical listening. Packets of programed materials will be provided for various study units. These packets will include pamphlets, realia of various kinds, transparencies, recordings, photographs, charts, posters, etc., depending upon the subject to be taught. There will be a concern about instructional systems of the type described by James Finn, Don Bushnell, Robert M. Gagne, and others. Computers will be increasingly used and will need special attention.

Obviously these instructional systems will require a new type of approach to all instructional materials. The "librarian's" concern will be with bringing together all materials necessary for the education of children--the best of recorded ideas. This means, too, that a new type of teacher is needed, one who is keenly sensitive to the varied needs of children and the rich resources needed to meet them. An instructional systems approach will require curriculum coordinators to work with teachers and administrators in planning materials to arrange needed educative experiences. It will require specialists in behavioral technology to prepare materials, to help arrange for the systematic integration of varied experiences.

NATIONAL EDUCATION ASSOCIATION
Center for the Study of Instruction
Innovation in Planning School Curricula
Airlie House Conference
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THE CURRICULUM*

John I. Goodlad

I. Introduction: The Reform Movement

Curriculum change usually stems from assumed excesses or inadequacies in what exists. A period of change produces its own shortcomings and creates the need for another. In relatively stable times, change is likely to be evolutionary and modest in character and to come from within; that is, school people effect it under the direction of their own professional leaders. But in periods of unusual political, social, or economic stress, curriculum change in the schools is likely to be more counter-cyclical in relation to the past, to occur rapidly, and to be led by persons not identified with earlier curricular change or, for that matter, with the schools--in effect, to be somewhat revolutionary in character. The curriculum change now underway in the United States, which dates back to about 1951 and which has been intense for about a decade, has been marked by both evolutionary and revolutionary characteristics.

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*This paper will be Chapter II of the National Society for the Study of Education (NSSE) 1966 Yearbook. It is being forwarded so as to afford a common background on the curriculum reform movement to Airlie House Conference participants. The position paper, "Schools for the Seventies: A Policy Statement for Curriculum Reform," will be distributed to participants after the October 2-4 meeting.

This chapter seeks to document in short space what is and for some years has been a very comprehensive movement in American education. The many generalizations set forth here stem from the writer's analysis during 1963-64 of more than 25 projects in curriculum reform and continuing analysis of additional projects during 1965. Because of the scope of this movement and space limitations, the data and specific examples to support the generalizations are not reported extensively here. They are available elsewhere (see John I. Goodlad, School Curriculum Reform in the United States. New York: The Fund for the Advancement of Education, 1964).

Initial leadership came from outside of what Conant identified as the "education establishment"[1]--that loosely-knit group of educators made up of state department of education personnel, school superintendents, principals, and teachers, and the professors of education who contribute to their professional preparation. University professors in the academic disciplines corresponding to subjects taught in the schools have been involved in unprecedented fashion, most of them for short periods of time but some of them on a continuing basis. In this second group, the names of Zacharias, Suppes, Begle, Karplus, and many more come readily to mind.[2] They came to effect needed change; they stayed out of fascination with the complex problems of educating the young.

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[1] See, for example, James B. Conant, The Education of American Teachers. New York: McGraw-Hill Book Co., 1963.

[2] Jerrold R. Zacharias is professor of physics at Massachusetts Institute of Technology and has been a prime mover in pre-collegiate curriculum reform; Patrick C. Suppes brought his philosophical, mathematical, and psychological abilities to bear on the development of a mathematics program for young children; E. G. Begle has headed the School Mathematics Study Group, first at Yale and then at Stanford; and Robert Karplus has experimented with new approaches to science for young children in his Science Curriculum Improvement Study.

Just as recent curriculum change has not been inspired and led at the grass-roots local and state levels by teaching, supervising, and administrative personnel in the schools, neither has it been financed there. Financial support--quite handsome by previous standards--has come from the National Science Foundation, the United States Office of Education, and private foundations. This flow of funds from the first two sources has placed the federal government squarely in the mainstream of educational affairs, inescapably affecting what is taught and learned in the nation's schools. The academic debate over whether or not there should be federal aid to education proceeded "hot and heavy" while federal aid became a substantial reality.

In effect, the recent and continuing effort for curriculum change in elementary and secondary schools has received its momentum from forces and interests lying largely outside of the state and local school systems charged politically with responsibility for determining what to teach. It is easy to see, therefore, given its pervasive scope, why the movement frequently is labelled "national." But it is not at all national in the sense of being nationally or federally controlled. The federal grantors have been circumspect in maintaining a "hands off" policy regarding the production of curriculum materials and have been exacting in their restrictions pertaining to advertising or proselytizing of any kind. Nor is the movement national in the sense of providing a single "national curriculum." The alternatives in mathematics, the sciences, and, more recently, English and the social sciences are increasing at a gratifying but bewildering rate. There is no question, however, given the initial emphasis on mathematics and the sciences and a corresponding imbalance in funding, that the current curriculum reform movement is heavily federally influenced and will continue to be for some years into the future.

Perhaps this curriculum reform movement of the 1950's and 1960's is best described as nationwide, in that its impact has been felt in Maine and California, Oregon and Florida, and throughout the great heartland of the United States. Relatively few high-school students study physics but more than half of those who do use materials produced by the Physical Science Study Committee. Many take biology and more than half of the high school biology textbooks sold in this country during 1965-66 have the Biological Sciences Curriculum Study label. The substance of curriculum projects such as the Chemical Education Materials Study is finding its way into the publications of commercial houses not officially releasing project materials. And curriculum products have been translated into many languages for distribution around the world.

SMSG, PSSC, BSCD, CHEMS, ESS--these are the new alphabet soup of American education. Many of these curriculum projects use up to a million dollars each in a year for the purpose of developing and refining instructional packages. Most of them are in large measure predicated on the assumption that the ends and means of schooling (but not necessarily of education as a whole) are derived first from the academic disciplines and only secondarily from characteristics of children or youth and of society in general. Let us now examine some of the sources and factors thought to be productive of the movement and then move on to some of its most central characteristics.

II. Influencing Forces and Factors

It is impossible to explain the current curriculum reform movement in any one-to-one relationship to possible causal factors. But, certainly, the following conditions are at least partially descriptive of the setting in which it was spawned.

First, World War II and its immediate aftermath revealed extensive (it has been described by some as shocking) mathematical and scientific illiteracy among high school graduates. As scientists became increasingly aware of this fact and, subsequently, looked into the quality and quantity of science and mathematics taught in secondary schools, realization of their own responsibility struck at least a core of them with increasing force. In fact, E. G. Begle, director of the School Mathematics Study Group, traces the roots of this far-reaching project directly to a soul-searching conference of mathematicians held in the early 50's.[3] Except for setting admission standards to their own institutions of higher learning and pre-requisites for admission to their courses, the academicians had been standing aloof from involvement with pre-collegiate curriculum matters.

Second, the United States was barely out of a hot war before it found itself in a cold war, a cold war calling particularly for personnel knowledgeable in the physical sciences and mathematics. A few far-sighted scholars, leading citizens, and members of Congress--somewhat belatedly, admittedly--saw the need. But both general concern and action lagged until 1957, when the launching of the first Russian satellite shook the American people out of their lassitude and focused upon the public schools the most critical attention they had received in decades. Educators, dodging the blows and licking their wounds, could not then have envisioned the attention, encouragement, and support that were to come to them in a short span of years, partly as a consequence of being placed at the core of the nation's malaise and, subsequently, as a consequence of being seen as at the core of the nation's welfare. Sputnik has been referred to so many times and in so many contexts that we are inclined to ignore or underestimate its significance as a factor productive of school curriculum reform.

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[3] Reported to the writer in a conference with Professor Begle in the process of collecting data for School Curriculum Reform in the United States, op. cit.

Third, the crippling economic depression predicted almost monotonously during the 1950's simply did not materialize. As a consequence, an expanding middle class knew greater prosperity and higher standards of living at an earlier age than ever before. And this relatively young group of ambitious men and women saw education as the road to the good life for their children--education of a sort thought basic for admission to the prestige colleges of the land. Meanwhile, repeated reports in the popular press predicted bulging college enrollments and an inadequate number of places for all who would be knocking at the doors. Parental attention turned to the public schools which, strangely and ironically, were expected both to do the job of preparation and to create the necessary college places. This attention no doubt stimulated educational change and innovation in general but it may have given special stimulus to the kind of curriculum reform getting underway. Most of this reform was spear-headed by distinguished scholars. Was it not, therefore, reasonable to assume that such persons would know best how to redesign the pre-collegiate curriculum for college preparation? It is not surprising that requests to participate in plans to develop and use the new curriculum materials came most frequently from suburban communities where this young, vocal, and ambitious group had come to raise its children.

Fourth, values which had long guided American life were shifting and crumbling, a process sharply accelerated by World War II. To be sure, there always had been surges of defiance against what appeared to be prevailing values--but at the periphery and by a few rather than at the center and by many. But now, the lives of millions were changing rapidly and fundamentally, in directions and ways that often were beyond their control. Young couples who had been taught the absolute virture of buying only what they could pay for discovered that what they wanted had doubled in price by the time they possessed the cash to pay for it. They would have been served better by a rational understanding of consumer economics than by absolute rules. Job opportunities took these young couples from the stable communities of their parents and grandparents to bedroom communities with no past--and frequently to a new, new community every other year. Job obsolescence clouded the future, creating the specter of unemployment in a land of plenty. Unemployment, in turn, threatened an individual's sense of worth, especially if his father had been deeply motivated by the work ethic. Home, job, values--these and everything else one had known--were changing. From New York's Madison Avenue to Chicago's South Side and

San Francisco's North Beach it was becoming increasingly apparent that "you can't count on nothing these days." The man on the street was feeling what the scholar was seeing: the emergence of new cultural values stressing uncertainty, adaptability, and the cultivation of rationality.

Fifth, and closely related to the above, the knowledge explosion was ruling out traditional approaches to curriculum planning. It was at long last becoming apparent that the search for those most important bits and pieces of knowledge ("facts") for transmittal to the young is futile. The very concept of fact was changing from that of a verifiable certainty to that of an observation taking its relevance from the theoretical construct in which it is used and by which it is described. Facts become facts only within the perspective of the viewer and are communicable as facts only within the communicated content of his perspective. Further, man's ways of viewing the universe and the accumulated products of his investigations now far surpassed the capacity of a single individual to encompass them. The curriculum increasingly was seen to need both fresh infusions of content and comprehensive reorganization emphasizing the structures of the academic disciplines and man's ways of knowing. The words "structure" and "intuition" marked the new pedaguese and were bandied about as carelessly and with as little understanding as "the child's needs" and "readiness" had been used in a preceding era.

Sixth, this growing preoccupation with the structures and strategies of the subject fields led to experimentation with children's abilities to learn them and a wave of new interest in early childhood schooling. At least a few of the scholars who had set out merely to demonstrate the ability of the young to handle solid fare discovered that curriculum development is more than arranging a series of topics in assumed order of their difficulty. The study of children's learning took on fresh and essentially scientific respectability. Piaget was rediscovered and his studies were replicated using modern statistical techniques. Similarly, what began as a rather mechanistic process of arranging content according to its assumed structure and of experimenting with gadgetry soon matured into studies of programing, instruction, and persistent problems of curriculum. Pressey, too, was rediscovered.

The above list represents a sample of both societal pressures arising outside of the formal processes of education and substantive pressures arising from advances within education and its study, all of which appear to have affected the force, direction, and nature of current curriculum reform. It is difficult to separate cause and effect or to distinguish between primary and secondary factors. The fact that both "crash" programs in practice and comprehensive programs of research have been mounted almost simultaneously is in large part due to both widespread recognition of need and the unprecedented response of the federal government to this need. Two other needs pertaining to the research-practice interplay, each the converse of the other, are becoming increasingly apparent. First, we need a larger contingent of researchers who step sagaciously from the laboratory of careful control into the laboratory of polyglot practice. Second, we need a larger contingent of educational leaders who point to the areas of drought yet to be made fertile through research and who use relevant research in their own decisions.

III. Characteristics of the Changing Curriculum

Initial curriculum reform concentrated on the high school. Procedures developed at this level subsequently were carried over with little modification into elementary school revision. But the difficulties there encountered were of such nature that re-examination of certain basic assumptions at both secondary and elementary school levels was called for. It seems advisable, therefore, to examine separately the characteristics of the new secondary as compared with the emerging elementary curriculum.

A. The Secondary Phase of Schooling

The current curriculum reform movement was at its inception a reaction to the fusion and correlation of subjects so often recommended but less often practiced during previous decades. Therefore, emphasis was upon discreteness of the academic disciplines: not science but biology, chemistry, and physics; not social studies but history, geography, and economics; not English but literature, composition, and grammar. The physics curriculum would be planned by physicists: high-school students would come to think like physicists.

The curriculum in each field was to be organized around primary structural elements of the discipline. Scholars, working primarily in summer institutes, sought to identify these, disagreements over which are primary often being settled by teachers selected from high schools who attempted to judge their appropriateness for adolescent learners. Interestingly, the identification of structural elements--concepts, key ideas, principles, and modes of inquiry--often postdated the selection of new content and did not, therefore, give direction to this process. The Woods Hole Conference (1960)[4] of scientists, psychologists, and educationists brought together to discuss problems of teaching various academic disciplines attracted considerable attention and stimulated a good deal of this belated curricular activity.

It was assumed that understanding these elements (rather than merely possessing facts) would give the student intellectual power--power to attack previously unknown problems and power to grasp intuitively the relationship of new phenomena not previously encountered to phenomena already experienced. Therefore, ability to think inductively became a built-in goal and teachers were encouraged to let students discover meanings for themselves. The word "discovery" popped up everywhere in articles describing new curriculum projects, authors frequently failing to distinguish between discovery as an aspect of inductive behavior to be sought in learners and discovery as a process of attaining or teaching for such behavior.

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[4] Jerome S. Bruner, The Process of Education. Cambridge, Massachusetts: Harvard University Press, 1960.

Commonly, specific curriculum planning as a subject field began with determining what a "typical" student should know on completing high school or the course. Work was then planned backward or downward to what was to be the student's beginning point and, later, upward to provide for the extended program of the more able students. Courses were intended to fit into existing time allotments but, as work progressed, the desire for more time was voiced, especially by scholars and teachers planning and teaching single year courses. Of course, for those planning in fields such as geography and anthropology, as yet lacking a clearly-staked claim to the high-school curriculum, any time at all would represent gain over the present situation; time for them was and is still a key problem.

In curriculum theory, the term "organizing elements" frequently is used in referring to the concepts, skills, or values serving as threads around which specific learning stimuli are to be organized.[5] We have seen that, in the curriculum reform movement discussed here, the identification of organizing elements frequently followed rather than preceded the selection of specific stimuli if, indeed, the former were identified at all. Herrick[6] and others refer to these stimuli as "organizing centers" for learning, points in time and place through which the student is guided toward the more fundamental organizing elements underlying the curriculum. Clearly, selection of these organizing centers was a prime concern during the early years of this high-school curriculum revision.

Guiding criteria for their selection, usually implicit rather than explicit, included the following: (1) The content used in the organizing center must be authentic and important to the field, as determined by leading scholars in it; (2) The content in the organizing center must have linkage value, that is, it should relate to other possibilities already experienced or to be experienced; (3) The organizing center should have great potentiality for involving the student fully, for assuring that he will become active in thinking and doing; (4) The organizing center should present alternative avenues of approach--reading books, viewing films, experimenting in the laboratory, and so on; (5) The organizing center should lead the student to discover for himself. Criteria pertaining to students' past experience, present interests, and individual differences were less apparent. If previous eras of curriculum reform can be described legitimately as child-centered or society-centered, the one currently underway can be described equally legitimately as discipline- or subject-centered, especially in reference to its beginnings.

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[5] Ralph W. Tyler, Basic Principles of Curriculum and Instruction. Chicago: University of Chicago Press, 1950.

[6] Strategies of Curriculum Development. Selected writings of the late Virgil E. Herrick (edited by James B. Macdonald, Dan W. Anderson, and Frank B. May). Columbus, Ohio: Charles E. Merrill Books, Inc., 1965.

Given criteria such as the above for selecting organizing centers, central focus on the development of a comprehensive instructional materials package comes as no surprise. Products of the Physical Science Study Committee set standards of excellence for textbooks, laboratory equipment, films, and supplementary materials of many kinds. Painstaking care in this project and others has gone into the production of superb films to demonstrate deceptively complex principles and to document the problems, motivations, and excitement of scientists at work. Sometimes, a collection of materials is to be consumed in the classroom as a total package; sometimes it may be broken up at the discretion of teachers. In some courses, there is a precise place for textbook, film, and laboratory, each alternating with the others according to a pre-determined sequence. In others, films and experiments are optional components of the teacher's total repertoire.

At the outset, curriculum reformers recognized formidable subject-matter deficiencies in teachers and set out to remedy them in summer and year-long institutes financed primarily through provisions of the National Defense Education Act and by the National Science Foundation. Tens of thousands of teachers participated, mostly in mathematics and the sciences, studying both content and ways of teaching it. Several of the curriculum revision projects restricted use of their materials only to school systems sending teachers to their institutes. Tens of thousands of additional teachers participated in local school district workshops designed primarily to update their subject-matter understanding. It is fair to say that, as a consequence, many teachers who had become lethargic and discouraged enjoyed fresh stimulation and satisfaction in their chosen work.

B. The Elementary Phase of Schooling

Only a few of the elementary-school curriculum projects date back to the 1950's. In fact, interest corresponding to interest in secondary-school curriculum revision is only beginning to become apparent. Actually, however, a number of passes at the task were made in the second half of the 1950's using many of the assumptions underlying high school reform. But many of these assumptions did not hold up and the passes fell far short of concerted action.

What has occurred so far at the elementary-school level resembles the high-school picture in several respects: tangible curriculum materials are in general more available in mathematics and science; the instructional materials package is central and is given high visibility; teachers in-service have participated in workshops and institutes stressing the new content; curriculum discourse stresses discreteness of the academic disciplines; and those words, "structure," "intuitive learning," and "discovery" came to the fore again. But beyond these similarities there are very basic differences in approach which already are affecting some high-school curriculum revisions and which, when followed through even to tentative conclusions, will have profound implications for the full sweep of the school curriculum.

Two troublesome questions have been encountered in seeking to extend separate disciplines downward. First, if root concepts in biology, chemistry, and physics are the basis of curriculum planning in the high school, what should be the basis of curriculum planning in the high school, what should be the basis in the elementary school? Presumably, these same concepts should be taught in a simpler but, nonetheless, honest way. The search for downward extensions of these organizing elements and for organizing centers through which to develop them with young children has proved both challenging and baffling, separating the men from the boys in curriculum reform. No doubt, getting back to the research laboratory and college teaching suddenly appeared very attractive to those scientists who really came face to face with the problems. Clearly, adequate solutions required virtually a full-time career commitment.

Second, which disciplines should be included in the elementary school curriculum or any division of it? The existing curriculum consisted, for example, of a hodge-podge of topics in science, not separate sequences in the several science fields. Either the commitment to preserving the integrity of each discipline had to go, or some very tough decisions as to priorities to be made, or some pattern of alternating attention to many disciplines had to be developed. For, clearly, there could not be thirty or more separate academic disciplines in the kindergarten!

In mathematics, the difficulties were not so formidable. Mathematics was firmly established in the curriculum in some form, and high-school mathematics always was based on the assumption of studies preceding it. The program of the School Mathematics Study Group, for example, planned from the top down rather than the bottom up, encountered a squeeze in the lower years because of an occasional poor fit between time available and substance to be put into it--a situation somewhat comparable to buttoning one's shirt from the top down and then discovering there is no hole remaining for the bottom button. But elementary science was much more troublesome and now social studies is proving to be equally so.

In retrospect, it is difficult to determine whether the issues were perceived in advance or whether the practical problems simply were dealt with on an ad hoc basis. At any rate, in elementary-school science at least four patterns have emerged: selection of a single discipline not normally taught in the high school (represented by the University of Illinois Elementary-School Science Project which is organized around selected major themes of astronomy); development of sequences in several sciences which then can be interchanged and alternated over six or seven years of instruction (represented by the Elementary-School Science Project at the University of California, Berkeley, which includes such fields as mathematics, physics, physiology, botany, chemistry, paleontology, and zoology); specific identification of basic skills and competencies thought to be essential to learning science but only general guidance in the selection of topics through which scientific behavior is to be achieved (represented by Science--A Process Approach, developed by the Commission on Science Education of the American Association for the Advancement of Science, and organized around such behaviors as observation, classification, measurement, communication, inference, and prediction), and development of a kind of spreading tree of concepts thought to be basic to science and its man-made divisions, with little or no effort to distinguish among these divisions (represented by the Science Curriculum Improvement Study, with headquarters at the University of California, Berkeley). Already it is becoming apparent that all of these and perhaps additional patterns are likely to emerge in the social studies, also, with previously neglected fields such as economics, law, and political science entering the picture.

Partly because of some of the dilemmas which become sharply apparent in considering the elementary-school curriculum, work at this level has proceeded more slowly and in more exploratory and experimental fashion. There has not been anything like the degree of intense action in which scholars arrived at some preliminary agreements at spring meetings, joined teachers for summers of hurried writing, tried out preliminary materials during the year, returned for an additional summer of writing, and then moved into trial editions of textbooks and supplementary materials--often within two years or less. Nor has there been the same assurance with respect to basic assumptions.

Notable among missing assumptions is uniform pre-commitment to at least the broad configurations of existing curricula--to time allotments, grade placement of courses, and traditional subjects, for example. Elementary-school curriculum reformers seem to have embraced, albeit hesitantly and partially, the notion that schools need not remain as they have been. Some of them have identified rather closely with recent increased interest in individual differences and with innovations such as nongrading, team teaching, programed instruction, and more flexible school facilities, often adapting their materials to them. In curriculum planning, some of them have been willing to break away from commitment to separate disciplines in the search both for more meaningful syntheses and for behaviors cutting across several fields within a general division of knowledge. And they have shown some inclination to plan from the bottom up rather than from the top down; as a consequence, they have tended to pay more attention to the developmental characteristics of children.

These curriculum ideas are not at all foreign to secondary education. They received much attention in the 1930's and 1940's. But the high school is closer to the scholar than is the elementary school--he receives its recent products--and, therefore, he probably concludes, it should be close to his discipline. Ideas such as the core curriculum, life-adjustment education, and problems of social living, rampant in the pre-war period, seemed to take the high school away from his discipline: it became something of a foreigner to him. Reform had to be away from what was presumed to exist. As a consequence, there has been an inadequate blending of new and old. These curriculum ideas will return to the high school, but probably not for a few more years.

The elementary school, on the other hand, always has been a stranger to the scholar. He can admit his ignorance freely and can listen to those who appear to be on intimate terms with it. There appears, therefore, to be more of a dialogue between those scholars coming new to the field and those scholars and teachers who have lived with it for some years. Perhaps because of this, curriculum change in the elementary school has been and probably will continue to be marked less by "crash" than by evolutionary characteristics. Nonetheless, some of the changes are likely to be quite sweeping.

IV. Critique

In that the current movement set out to correct certain curricular deficiencies and imbalances and to a considerable degree has succeeded, it has provided some notable assets. But inasmuch as it was also a reaction to previous excesses and shortcomings, recent curriculum change has spawned some excesses and shortcomings of its own.

A. Assets

The serious involvement of scholars in fields such as mathematics, biology, chemistry, physics, and, more recently, English, economics, history, geography, anthropology, and sociology was long overdue. While most of them still view this activity as peripheral to their own interests, they now recognize its importance and seem pleased that at least some of their colleagues are seriously involved. However, relatively few professors would urge any substantial career commitment for their own graduate students. The problem of engaging the attention of first-rate academic men and women on a continuing basis remains.

The participation of scholars which already has occurred has produced some penetrating analysis of the lower roots of the liberal arts tree--at least enough to expose both the importance and the complexity of this work. Up to this post-World War II period, there had not been, in relatively recent times, any serious, specific consideration of what the nature and structure of knowledge might mean for curriculum and instruction. For nearly three decades, the attention of those persons most interested in pre-collegiate education had focused primarily on the educational implications of human development and societal conditions. Although organized subject-matter had remained central to what went on in the classroom, the possibilities of organizing it uniquely for instruction were largely ignored. Interestingly, Dewey's concern for this question had been virtually bypassed but is now being rediscovered. While scholars in subjects taught in the lower schools injected emphasis on their disciplines into these schools, the empirical questions are being pushed mainly by psychologists, many of whom have more than passing interest in programed instruction. Little of an immediately practical nature has as yet emanated from this work but at least its potentiality is now spotlighted.

Similarly, psychologists in increasing numbers are studying directly the complex processes of human inquiry rather than those rote processes which more readily seem to permit inferences from studies of animals. Again, much of the stimulus came initially from subject-matter specialists, especially in the sciences, who saw that any attempt to "cover" the vast accumulations of knowledge in their fields not only was doomed at the outset but also was inimical to the processes thought by them to be central to science and to the work of scientists. Educational theories stressing inductive reasoning for students and inductive methods for teachers run through educational literature of the twentieth century. But they are now receiving a centrality and a respectability not previously enjoyed, providing an example of change that is more cumulative than counter-cyclical. Such theories have both contributed to directions inherent in the new curriculum reform and been strengthened by it.

There is ample testimony and some research[7] to the effect that many students of previous pedestrian performance in a given field perform well in a restructured program. Perhaps this is because some new behaviors are stressed; because more varied avenues for learning usually are provided; because stimuli are more carefully programed to reduce the possibility for error; or because of some combination of these and other factors. At any rate, the hypothesis that reasonable academic attainments are within the capabilities of all students, given proper and adequate modifications of learning environments, opens up virtually limitless possibilities for educational research and practice. In our more rapturous moments, we are able even to envision the ultimate emergence of a science of pedagogy supporting individual diagnosis and subsequent prescriptions from a pharmacy of tested educational alternatives.

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[7] See, for example, Robert M. Gagné and associates, "Factors in Acquiring Knowledge of a Mathematical Task," Psychological Monographs: General and Applied, Vol. 76, No. 7, (Whole No. 526), 1962, pp. 1-21.

Still another asset in present-day curriculum change is extensive inclusion of materials other than textbooks in the total instructional package: films, filmstrips, programed exercises, living creatures, and realia of many kinds. It often is impossible for teachers to offer the courses without using the new audiovisual media. As a consequence, they are discovering that modern technology can carry instruction far beyond the almost exclusively telling and listening activity still characterizing teaching and that a considerable amount of it can be put to work merely by pressing buttons and switches. Most of us remember only too well the frustrations of noisy projectors, broken film, and missing pick-up reels, but the 8mm film cartridge and accompanying projector promise to end all that. The picture is not quite as rosy as some audiovisual enthusiasts would have us believe but the problems now call largely for wise expenditure of funds and improved education of teachers.

Widespread in-service education of teachers, primarily in the subject-matter to be taught but also in methodology including the use of audiovisual techniques, has been a significant contribution of the reform movement. Perhaps even more significant than the fact of updating has been growing realization of the need for continuing self-improvement. One's formal education is merely a beginning; at its best--seldom achieved--preparation for self-propelled learning. Repeated testimonials following NDEA and NSF supported workshops and institutes suggest significant rejuvenation of many teachers and an invigorated profession.

Extensive infusion of new personnel and funds and the collaboration of many groups have dramatized the conditions essential to significant, continuing curriculum revision. Afternoon meetings of tired teachers, on their own time, kept the school ship afloat during previous decades but did not bring about significant curriculum renewal. The tools were missing. Worse, educators were only dimly aware of the lack. But now we know what can be accomplished through combining millions of dollars, the talents of psychologists and of leading scholars in the fields to be taught, subsidized summer time, and the competence of publishers and film makers with the practical experience of teachers. To date, however, we have seen only a rather crude process of trial and error, lacking in theory and truly experimental self-correction. The full promise of this unique combination of resources still lies ahead.

B. Limitations and Liabilities

Reaction in current curriculum reform against supposed over-emphasis on problems of social living and self-adjustment in previous decades has resulted in heavy emphasis on problems inherent in the disciplines. There is some danger, as a consequence, that those significant mankind problems growing out of where and when one lives--problems which cut across subject lines--may not be brought into the classroom. Similarly, there now appears to be growing concern that present emphases on underlying concepts, abstractions, and so-called intuitive behavior, especially in mathematics, is resulting in neglect of more immediately practical operations and applications. Disagreement of this kind, likely to grow in the immediate future, carries us into issues pertaining to goals and evaluation which are discussed below.

To date, focusing on the separate disciplines has tended to spotlight those already firmly established in the curriculum. It was only natural that existing curriculum areas would receive first attention as the need for reform became increasingly apparent. But a less apparent curriculum reform also was needed. For some years, fields which had only a toe-hold on the college curriculum have been gaining a central place there and new ones have emerged as a result of splitting off from existing disciplines. What should be the place of these emerging fields in pre-collegiate education? At the very period this question should have been receiving serious attention, the race was on to strengthen subjects already in elementary and secondary curricula and to retain them as separate disciplines. Inevitably, the competition for time increased. The conditions have not been favorable, then, for incorporating new fields either as separate entities or in combination with related subjects. Resolution of this problem is an agenda item for the future, one that is likely to be taken up first for the elementary school.

Planning from the top down and within the structures of the disciplines has tended to slight the developmental processes of learners--their interests, the irregularity of their growth, and their individual differences. Further, it is fair to say that the new curriculum movement virtually ignored the fact that thousands upon thousands of teachers who were to be involved had been through a post-war decade of intensive child study. Many students of education saw that considerations pertaining to students, on one hand, and to subject-matter, on the other, should be brought together. But the marriage did not occur. The leadership for reform came from outside of the educational establishment, was contemptuous of it, and suspicious or ignorant of the child study movement then sweeping America. Appropriate interrelating of all dimensions of the curriculum becomes another agenda item for tomorrow, one that increasingly is becoming apparent to researchers and practitioners alike. Interestingly, it was Professor Zacharias, a prime mover in current curriculum change, who at the 1965 White House Conference on Education forcefully expressed his concern over the absence of the child in present educational discourse.

The implied completeness and order of some instructional packages may very well deny, for a time at least, the spontaneity and pupil-teacher planning of less structured curricula. Many teachers do not yet feel adequately comfortable with the new curricula and are reluctant, as a result, to depart from the manuals and materials provided. Consequently, the free-wheeling, exploratory processes so valued by project staffs and their advisors often are abortive at the most critical point--the point where student and teacher come together. In this connection, the writer remembers only too vividly visiting a classroom using--thankfully, only beginning to use--the materials of a new project in elementary-school science. Arriving a few minutes before the class was scheduled to begin, he almost tripped over a cluster of excited children examining a handsome box turtle. Said the teacher, "Now, children, put away the turtle. We're going to have our science lesson." The lesson was on crabs!

The broken-front, separate piece approach to curriculum planning has placed severe burdens of choice and synthesis on local school districts. They have few guidelines for choosing this mathematics program over that one and the choice problem will become infinitely more complicated when the many diverse programs in the social studies become available. It is difficult to provide satisfactory answers to querying parents because, according to project staffs, existing standardized tests do not get at what their programs are designed to do. There are no accepted yardsticks for adequately comparing new and old or several new curricula with each other. The absence of specific objectives does not help, especially when state and local school systems (which have some legal responsibility for enunciating what their schools are for) are equally vague. As a consequence, school systems purchasing new instructional materials virtually "buy" the educational objectives built into them.

If subject-matter specialists have a difficult task in seeking to squeeze all they want to do into short spans of time, the problem is compounded at the local school district level. The computer increasingly is being used to solve complex problems of scheduling students in a wider range of curricula alternatives.[8] But it has not yet proved useful in increasing the total time available or in making the basic value choices, the fears of many persons notwithstanding! Summer school programs have been vastly expanded and talk of a longer school day and week often are in the air. But parents as well as high-school students increasingly express concern over the pressure and those ever-present College Entrance Examination Board tests. Clearly, appraisal and reorganization of the curriculum as a totality, rather than a collection of pieces, are called for.

Emphasis on the subject-field as both ends and means of schooling has brought with it several troublesome problems. In their preoccupation with what content is to be learned, some project staffs have flagrantly violated or ignored the old curriculum principle; specify what the student is to be able to do. One searches in vain for such specification in the manuals and other descriptive documents of many projects. Even in what one must conclude are the best programs, from the point of view of specificity in educational objectives, one is usually forced to settle for vague statements about learning the structures and methods of the subject and to think like a chemist of physicist.

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[8] See John I. Goodlad and Associates, Application of Electronic Data Processing Methods in Education. Project No. F-026, Cooperative Research Program of the Office of Education, United States Department of Health, Education, and Welfare, January, 1965.

The field of curriculum, although young, has some useful lore. Those who work in the vineyard have responsibility for familiarizing themselves with this lore, even if only to reject it after thoughtful consideration. The need to clarify educational objectives for purposes of selecting what to teach and evaluating both pupil performance and program effectiveness is a first principle, one that is increasingly being reinforced.[9] There is as yet little evidence that this principle is guiding curriculum reform.

Failure to specify educational objectives confounds processes of curriculum evaluation and revision. There is no point in experimentally comparing methods of achieving objectives if these objectives are not desired. And if the objectives, once found, are also found wanting, then new statements of objectives as well as new means for attaining them are necessitated. Recent advances in analytical philosophy might well be put to work in clarifying terms and in distinguishing between normative and experimental processes in curriculum development. Such analyses are conspicuously absent.

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[9] A landmark document in this connection is Taxonomy in Educational Objectives, Handbook I: Cognitive Domain (edited by Benjamin S. Bloom). New York: Longmans, Green and Co., 1956 (preliminary edition, 1954). More recent significant contributions include Robert F. Mager, Preparing Objectives for Programed Instruction. San Francisco: Fearon Publishers, 1962; and David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia, Taxonomy of Educational Objectives, Handbook II: Affective Domain, New York: David McKay Co., Inc., 1964.

By failing to clarify goals, the new movement likewise has failed to advance the search for relationships between immediate and intermediate objectives of schooling and more remote, long-term aims of education. We can have little confidence that strictly academic goals for schooling, implied in the academic stuff to be learned rather than specified, are adequate. The correlations between academic grades and anything other than academic grades--good citizenship, vocational success, honesty, personal autonomy, or mental health--are shockingly low. Perhaps we need to look back upon possible aims of education provided by philosophical and theological speculation, to translate these into more specific human behaviors, and then to experiment with alternative ways of achieving them. The tasks call for a consortium of scholars and processes of inquiry unprecedented in education.

C. Some Continuing Issues and Problems

Problems and issues for continuing curriculum development have been implied or specifically identified in every section of this chapter. By way of conclusion, several of these are discussed briefly here for purposes of giving a sense of direction for the future.

The movement described has been experimental only in rare instances. It began and generally stayed with some initial assumptions, refining rather than testing them in practice. Thus, the request for and the nature of feedback from cooperating schools has focused not so much on the viability of what was being attempted as on the effectiveness with which it was being accomplished. But, even here, there rarely have been clear-cut alternatives to test and from which to choose.[10] We are likely to witness a marked change in this situation during the next decade. The need to re-establish concern for subject-matter in the curriculum is being met. There is no longer the same urgency about it; the pressure for crash programs, therefore, has been vastly relieved. The documents emerging from projects are less self-congratulatory and, especially at the elementary-school level, show increased awareness of the curricular issues and alternative ways of resolving them. These conditions, added to the fresh interest of researchers in curriculum problems rather than curriculum production, auger well for some truly experimental work in the rather immediate future.

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[10] The writer realizes that, in making generalizations of this kind here and elsewhere in the chapter, he does an injustice to those projects which constitute an exception. For example, it is noteworthy in regard to this particular generalization that the Biological Sciences Curriculum Study presents Green, Yellow, and Blue versions, each differing in approach but each organized around the same unifying concepts. But to list any exceptions is to run the danger of slighting others even more than is the case when none is cited. For this reason, the writer has chosen the latter alternative almost exclusively.

As mentioned earlier, there often is a formidable gap between the intent of curriculum projects and what actually happens in the classrooms. This problem is still regarded by many as a direct consequence of teachers' inadequacy in the subject's content, a deduction that follows consistently from the naive notion that teaching begins and ends with the subject. Uncertainty with what is to be taught and learned is a factor but one has only to observe the inept classroom behavior of teachers who know their fields thoroughly (most university professors, for example, who attempt to teach young children for a full semester rather than in occasional guest appearances) to realize that much more is involved. Part of the trouble lies also in personality difficulties; part of it in not adequately understanding the age group; part of it in not adhering to basic pedagogical principles. The first probably requires therapy for its correction. The other two can be and often have been taught and learned in teacher-education programs. Regrettably, in recent years, they have been given back-of-the-hand treatment or shrugged off as unimportant. They must return to the center of the ring, this time with subject-matter to be taught, if the gap between the "paper curriculum" and the instructional curriculum is to be closed.

It is becoming increasingly clear that the pre-packaging of curriculum materials for a complete course, useful though this has proved to be, is not adequate for the diverse demands of students and teachers. At the same time, however, teachers are acutely aware of the value of many different kinds of stimuli which bring the student into direct confrontation with the content of instruction. Materials centers in each school which facilitate the building of one's own course to supplement or replace existing ones are essential. These, in turn, should be backed by district-wide centers and computer-based information libraries listing what is available in adjoining districts, a state, or a region. Modest facilities of this kind exist in many places and encouraging plans for their further development and expansion are underway. But it is sobering to realize that only about half of the elementary schools in the United States possess libraries of any kind and that most of the other half are woefully short of books for their libraries. There appears to be one level of discourse in education where we talk champagne and another where we drink half-beer.

There is a host of more theoretical and speculative problems and issues to occupy our attention in the years ahead. The most important of these is the question of ends. We are in a seething period of world-wide change, some of it revolutionary. We cannot predict the kind of world today's school population will live in and what will be expected of it. An academic overhaul of our schools appeared clearly to be necessary and we are in the process of effecting it. And yet, we can have little confidence that the new curricula come even close to doing what is needed. In fact, we know precious little about what they are accomplishing, to say nothing about whether what they are doing would please us if we knew more precisely what it is. Both the criteria and the machinery for assessment are lacking. The issues and the problems involved in establishing such criteria and such machinery are complex and tough. But they grow no easier because of our neglect.

Four kinds of activities for their preliminary resolution appear to be called for. First, a colloquy over possible aims for American education needs to be initiated at the national level and carried over into state and local school districts. It is interesting to note that President Lyndon B. Johnson already has moved to appoint a committee of distinguished citizens to formulate statements of the nation's educational, economic, and social needs. Whether it will initiate the colloquy referred to here remains to be seen. Second, state and local school districts need to commit themselves to priorities stated as educational goals. Third, techniques for assessing the attainment of whatever goals are chosen must be developed. Fourth, we must engage in vigorous trial and experimental comparisons of alternative ways of achieving these goals. This last task might well be appropriate for a research and development center of the kind now being financed through the United States Office of Education.

A previous section of this chapter suggested that the cart often is put before the horse in regard to the relationship between organizing elements and organizing centers in the curriculum. It will be recalled that the former are the fundamental concepts, ideas, principles, skills and values serving to tie together the organizing centers to be strung like beads on the threads, so to speak. Hopefully, organizing elements are what the student is to discover for himself and, subsequently, to deepen and broaden in meaning. There are essentially two types of organizing elements: substantive and behavioral. In planning for learning and teaching, one is rather meaningless without the other.

Let us imagine a two-dimensional grid with the intended behavior to be developed on one axis and the substantive concept or principle on the other. The organizing center is shown at the point of intersection (Figure 1). Through it, students are to be presented with opportunities to apply (behavioral organizing element) principles of energy (substantive organizing element). A series of such organizing centers through time provides a third dimension and suggests possible increasing complexity of students' learnings in a course or over a period of several years. We now see the utility of educational objectives specifying both behavior and content and their relationship to other curricular decisions: selection of learning opportunities, determination of sequences, evaluation of student progress, and so on. The end product of a whole series of such decisions is a curriculum design.

FIGURE 1

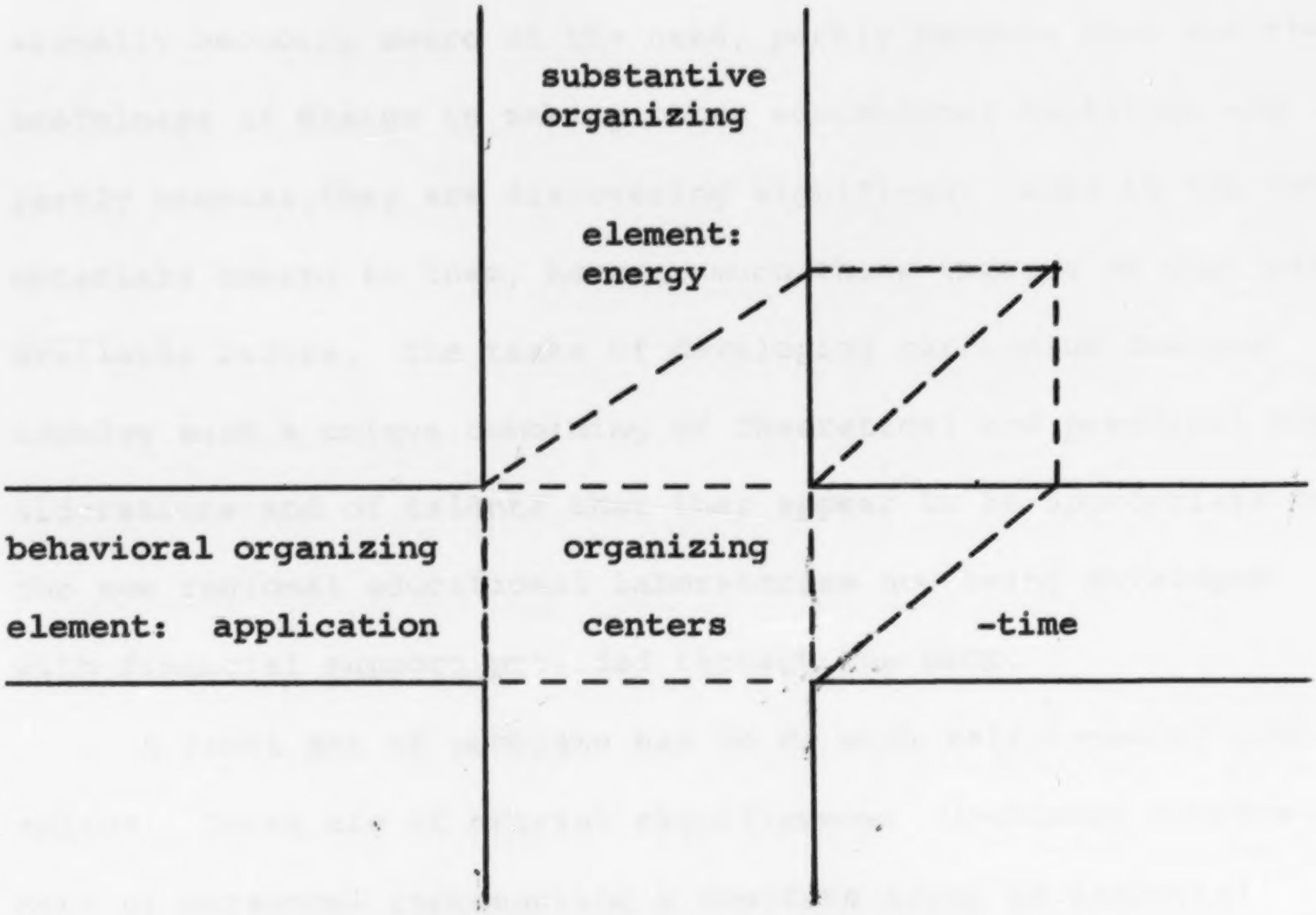
substantive
organizing
element:
energy
behavioral organizing
element: application
organizing
centers
-time

Figure 1: Grid of substantive and behavioral organizing elements in science with organizing centers at the point of intersection and extending through time as the third dimension.

Needless to say at this point, neither the study of curriculum design nor the production of curriculum designs based on answers to the whole gamut of pertinent curriculum questions has attracted much attention in recent years. The specification of organizing centers and the production of materials for them have been the predominant preoccupations. The more theoretical issues of curriculum planning have gone begging. Interestingly, public school personnel (notably the curriculum staff of the Montgomery County, Maryland, Public Schools, for example) are occasionally becoming aware of the need, partly because they see the usefulness of design in making other educational decisions and partly because they are discovering significant lacks in the new materials coming to them, however much these improve on what was available before. The tasks of developing curriculum designs involve such a unique combining of theoretical and practical considerations and of talents that they appear to be appropriate for the new regional educational laboratories now being developed with financial support provided through the USOE.

A final set of problems has to do with self-renewing mechanisms. Three are of crucial significance: continued involvement of personnel representing a complete array of essential competencies, the preparation of teachers, and the education of teachers of teachers. Regarding the first, the heart of the matter is in keeping the subject-matter specialists involved, since the problems are inherently interesting to educationists and increasingly so to psychologists, linguists, and others committed to the study of human behavior. The professor of English, on the other hand, while interested in whether or not high-school students study Milton, is more interested in analysis of what

Milton wrote. There is little hope of professors in the fields taught in elementary and secondary education becoming permanently involved in planning pre-collegiate curricula and, were they to do so, the freshness and vigor of their contribution would diminish. Curriculum revision will move forward adequately if these scholars can be attracted into summer institutes and other short-term activities and if educationists committed to curriculum development have the good sense to ask of them the right questions.

Regarding the second, the present undergraduate curricula of prospective teachers generally do not represent the approach which most of these young people will be expected to further when they begin their teaching careers. The scholars have not yet effected in their own institutions the curriculum changes which they have been urging upon the schools. The colleges of America are long overdue for sweeping educational reform and although needed changes are appearing at an accelerating rate, particularly in several new state-supported institutions, the great mass of higher education is occupied more with numbers than with self-appraisal. Today's high-school graduates, many of whom have known only the new mathematics, biology, chemistry, and physics are demanding something different of their chosen colleges and are becoming factors productive of reform. For some years yet, however, school systems cannot count on beginning teachers' awareness of modern curricular emphases and must provide immediate in-service education for them. Of course, school systems which intend to keep abreast of the times always must make every possible provision for the continuing self-renewal of their teachers.

The current curriculum reform movement has proceeded apart from the education of teachers of teachers. In general, project directors have not been surrounded by doctoral students in their own fields or in the field of education. Usually, they have left this curriculum work for periods of the day to lecture or to engage otherwise in activities bearing no relationship to it. Naively, given the inherent complexity of what they seek to do, they have employed assistants, rarely above the master's level, and a teacher or two from surrounding schools. Occasionally, they have employed psychologists and educationists as consultants, but rarely for periods of such length that groups of scholars have come seriously to grips with the issues. Again, there have been notable exceptions. Similarly, doctoral students in education have been involved only rarely. Problems of practical significance offering quite basic research possibilities have gone begging.

The price of prejudice, ignorance, and poor communication--these are but some of the reasons for these inexcusable educational gaps--comes high. They have served to block full utilization of curriculum ideas and personnel essential to comprehensive curriculum development in all its aspects. In spite of this, significant excesses and shortcomings in previous curriculum development have been remedied. The excesses and shortcomings in the present movement are now quite apparent and can be corrected short of a counter-reform through the combined efforts of scholars in the fields to be taught, teachers in the schools, psychologists and educationists. Perhaps, through an evolutionary process profiting from awareness of the past and especially from strengths and weaknesses in earlier curriculum efforts, we will both produce improved curriculum materials and advance the study of curriculum.

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GUIDELINES FOR CURRICULUM, SCHOOL, AND CLASSROOM ORGANIZATION

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Introduction

New approaches to organizing the school and its program are prominent in the present educational reform movement. These approaches include the many forms of cooperative or team teaching; new patterns of staff specialization; various provisions for conducting nongraded instruction; numerous versions of age, ability, or achievement-level grouping; and novel patterns of classroom organization that are represented by the Durrell pupil-team-learning plan and by the program at the Oakleaf School in suburban Pittsburgh that uses individual "prescriptions" for learning.

There are proposals also for changing the organization of the curriculum. Some proposals call for setting up continuous, vertical curricular sequences without grade-level division lines. Others call for establishing in some areas a spiral progression in which the learner encounters the same topic two or more times at successively higher levels of advancement within the curricular sequence. There are proposals that would have pupils study some topics--algebraic equations, for example--at much earlier ages than is conventional. A radical departure in curriculum building is the experimental program in elementary science being developed under the auspices of the American Association for the Advancement of Science that is entitled *Science--A Process Approach*. In this program, the curricular units that are placed in sequence represent different areas and levels of competence in conducting scientific inquiry (the *processes* of learning science) rather than areas and levels of scientific knowledge (the *content* of science).

In *Schools for the Sixties* the NEA Project on Instruction gives due attention to organizational approaches to strengthening the instructional program. Nine of the 33 recommendations made in that report are concerned with matters of organization for instruction. Of these nine, four deal with organizing the curriculum, four with over-all school organization, and one with classroom organization.

The purpose of this paper is to offer principles and guidelines that school systems can use in planning and conducting projects to introduce organizational changes. *The focus of these guidelines should not be on increasing the number of local adoptions of innovations in organization for instruction but rather on increasing the effectiveness of such change programs*. During the past several years, thousands of school systems have introduced new organizational patterns. In many instances, these structural changes have been made without any formal provisions to ensure that they would improve the quality of instruction. This probably reflects the fact that, by disposition and habit, many school administrators are more concerned about organizational arrangements than about the substance or quality of the instructional pattern. Another common fault in local change programs is that the organizational innovations are poorly implemented. All too often, the form of the organizational change is implemented without accomplishing the behavioral changes in administrators and teachers that the organizational arrangements require to be effective. Guidelines are needed, then, to help school leaders determine both the ends and the means that are involved in making changes in organization for instruction.

The R&D approach to setting up guidelines for local change programs

Planning local programs to utilize educational innovations falls within the orbit of dissemination, the last phase in the research-and-development (R&D) process of designing, constructing, testing and utilizing an innovation. The term dissemination is used here to mean "spreading abroad" (Webster), and what is spread is the use of the innovation rather than merely information about it. Properly, dissemination of an innovation would occur after it had been effectively implemented in a variety of field settings and its outcomes evaluated. If the outcomes were found to be desirable, it would be appropriate to promote the innovation's widespread use. The dissemination programs set up to accomplish this should convey information about the innovation, the settings in which it had been tried, and the outcomes of its use in those settings. Also, the dissemination program should offer local school leaders specific guidelines on evaluating the desirability of introducing the innovation in the local setting, on meeting requirements for implementing it effectively, and on conducting an evaluation of outcomes.

Presently, the education profession possesses very limited knowledge of the processes of disseminating innovations. The materials, procedure, and programs used currently in marketing new developments are poorly contrived. In the area of dissemination, we proceed by rule of thumb rather than by using tested procedures that are based on established principles about change processes. Given this situation, the task of our CSI project is to conduct a full-scale R&D program on designing, constructing, testing, and disseminating programs that accomplish effective dissemination of educational innovations. The programs we speak of would have as their purpose the widespread and successful use of innovations by school systems across the country.

In facing up to this R&D task, we should take account of the fact that few of the many innovations being brought forward in today's reform movement even approach being adequately developed and field tested. This applies to all areas of innovation including curriculum, teacher education, educational technology, and organization for instruction. In view of this limitation, some basic questions confront this CSI project: To what extent, and how, can dissemination procedures be worked out that would enable school systems to utilize incompletely-developed innovations effectively? To what extent, and how, can school systems that adopt incompletely-developed innovations participate usefully in the R&D process of designing, implementing, and evaluating those innovations? Should the dissemination procedures and programs developed by this CSI project be restricted to those few innovations that have been rather fully developed and field tested? These issues will be considered on the following pages as they relate to changes in organization for instruction.

The proposed CSI demonstration centers would appear to have three major purposes. One is that of developing and testing programs for making effective use of different types of innovations, and innovations at different stages of development. This would provide increased understanding of the variables and processes involved when school systems adopt innovations. Such understanding would contribute toward a theoretical basis for planning and conducting local change projects. In addition, accomplishing this purpose would mean that tested programs for the successful implementation of certain innovations would be made available to schools.

A second purpose of the demonstration centers is that of designing and testing programs whereby school systems would develop capabilities in planning and conducting local change projects. Implied in this purpose is that school systems would develop sound bases for deciding when not to adopt an innovation, or for deciding priorities among the many innovations being marketed.

The third purpose is that of developing, testing, and demonstrating ways in which an agency such as CSI can play an effective part in the dissemination of educational innovations.

In this paper, the suggested guidelines for local change programs are concerned with all three of these purposes, with particular attention to the second--developing in school systems capabilities for planning and conducting local change programs. One reason for stressing this purpose is that CSI cannot successfully develop and test programs to implement innovations in school systems serving as demonstration centers unless the system's staff members have those capabilities that are required of them as participants in the implementation programs. A second reason is that the adoption of an innovation by a school system should never be a matter simply of replacing some part of the system's program with the innovation in a way similar to replacing an automobile part. Innovations, to be implemented effectively, must be adapted to the local situation; ordinarily they affect numerous parts of the school system's program and adjustments in these parts are necessary to make the innovation work successfully. Also, each school system needs to use different procedures in implementing the innovation than any other since no two school systems are strictly similar in aims, organization, and program, or in readiness to adopt an innovation. A third reason for placing major emphasis on building the school system's capabilities in conducting innovative programs is that the nationwide dissemination of new developments in education will require that, in most instances, the local system's staff assumes responsibility for planning and conducting its own implementation programs with limited outside help. There will not be, in the foreseeable future, a sufficient number of educational change agents outside the schools to offer more than a small fraction of the leadership that school systems will require in planning and conducting change programs.

General guidelines for deciding about adopting organizational changes

School leaders should not start the process of making organizational changes by considering the adoption of a given innovation, whether it be Nongraded Plan N, Team Teaching Plan O, Grouping Plan P, or Spiral Science Curriculum Q. The correct place to start would be with a review of the school system's aims. Perhaps the aims previously adopted will be found adequate. Perhaps it will be decided that they should be changed, or that the relative emphases placed on different aims should be modified. Thus it might be decided to eliminate driver education, or to offer all pupils elementary instruction in French, or to teach all pupils scientists' methods of inquiry, or to place greater stress on teaching all pupils to read well and less stress on instruction in art or foreign language. If the aims were changed, this might call for organizational changes in curriculum, in the classroom, or in the entire school. However, such changes in organization might be needed also to improve instruction in relation to aims that had been adopted previously.

The logical next step would be to take stock of the school system's program in relation to accomplishing its aims. How well are the aims that have been adopted (whether old or new) being achieved? How successful is the reading program, considering the school's aims and the needs and abilities of different children? Is the science program accomplishing its purposes, and with all pupils regardless of their ages or levels of ability? Are the pupils of different ability levels learning skills in independent study or are such skills being developed only in pupils of relatively high ability? Etc.

Once this stock taking had been completed, the proper next step would be for the school leadership to consider organizational changes, among other possible changes, as they may relate to improving the accomplishment of educational aims. However, the organizational changes to consider in this step are not specific innovations but organizational themes. To illustrate, the school system's leaders should examine the theme of teacher cooperation instead of singling out specific approaches to team teaching such as the Norwalk Plan or the Lexington Plan. Or, to use another illustration, they should examine the theme of continuous progress rather than looking into the nongraded program in the elementary schools at Appleton, Wisconsin or that in the high school at Englewood, Florida.

What is meant by examining an organizational theme in its relations with educational aims? Essentially this means looking to the reasons why employing the theme might be expected to improve the accomplishment of the aims in question. These reasons might be merely "reasonable," that is, merely plausible. Or they might be cause-effect principles established in other types of situations and now used as a theoretical linkage between the organizational theme and the aims of instruction. Finally, they might be direct causal relationships, established in previous educational research, between the theme and the aims. Unfortunately, proven relationships of the last sort are rare in connection with any one of the innovations in today's reform movement. For that matter, they are rare with any educational practices, whether novel or traditional.

The next step would be to gather and evaluate whatever data were available from various projects, old and new, that had designed, implemented, and evaluated ways of putting the organizational theme in operation in schools. The data sought would be in answer to questions such as these: What are the various plans that have been devised to employ the theme under consideration, and what are the features of each plan? What educational aims was each plan designed to foster? How effectively has each plan been implemented, and in what types of school settings? What evidence is there that the plan has improved the accomplishment of the instructional aims it was designed to serve? What have been other outcomes of the plans--effects on pupil adjustment, teacher morale, school costs, school-community relations, etc.? If, on balance, one or more of the plans have yielded desirable outcomes, what about the practicality of implementing them? What problems of implementation have been encountered in the various tryouts of the plan(s), and what solutions to these problems have been worked out?

At this point, it would seem that a school system would either be ready to adopt one or more of the organizational changes that expressed the theme being considered, or to abandon the idea of making such changes. However, there remains the step of determining the desirability and the feasibility of adopting any of the changes that appear promising. The desirability question should be answered by taking account of those educational aims the school system wants to accomplish better; those organizational themes that are most strongly related to accomplishing the aims in question; and those particular organizational innovations that best incorporate the themes selected. Perhaps a school system's answer to the desirability question is "Yes." To illustrate, the local leaders may decide that this nongrading plan effectively expresses the theme of continuous progress that in turn is strongly related to the school system's aim of adapting instruction to individual differences in achievement level and learning rate. Fine. The feasibility question is next. It deals with the school system's readiness to implement the innovation successfully. It involves matters such as attitudes of community, school board, and staff toward the innovation; the availability of adequate leadership for introducing the innovation; and access to needed funds.

Eduational aims and the themes of proposed organizational changes

The approach to deciding about local change projects that has just been proposed focuses on instructional aims and program themes that relate to accomplishing those aims. Before considering how CSI demonstration centers might go about implementing the recommendations concerned with organization in Schools for the Sixties, it will be well for us to examine the relations between certain organizational themes and certain instructional aims that are being emphasized in today's educational reform movement. This is in accordance with Recommendation 20 in the list developed by the Project on

Instruction: "The aims of education should serve as a guide for making decisions about curriculum organization as well as about all other aspects of the instructional program."

At least five major aims of instruction are emphasized in the speeches and writings of leading reform spokesmen. If the reform spokesmen and the many innovators who are developing means of bringing these aims into the classroom have their way, any school system that doesn't pursue these aims energetically will soon become out of date. The five aims are listed, and briefly described, below.

1. Stress the teaching of theory rather than information in the several content areas of the curriculum, at all levels of instruction, and to all students. This calls for focusing teaching upon the general ideas or principles that enable one to explain or predict phenomena dealt with in the curricular area.

2. Teach methods of problem-solving thinking or inquiry as those methods are employed in gaining new knowledge within a given curricular area. Thus, pupils should learn scientists' methods of inquiry, and should learn science by following the intellectual pathways that scientists followed in gaining the knowledge the pupil is studying. Similarly, pupils should learn to think like mathematicians do, and should learn the methods of inquiry used by social scientists in such areas as

Sociology and history.

3. Teach competencies in independent study so that all pupils become capable of planning and conducting their own learning activities much, if not most, of the time. Independent study, or self-instruction, requires among other things that the pupil possess skills in the uses of English, arithmetic, and instruments of measurement.

4. Set standards of excellence or mastery and hold all pupils to levels of accomplishment corresponding to those standards in whatever they study. The notion here is that the instructional program is at fault when a pupil fails to learn well what he studies. The problem is to suit the learning task, the methods of instruction, and the pace of advancement to the pupil's characteristics as a learner.

5. Individualize instruction by providing each pupil with a program of studies that is tailored to his learning needs and capabilities. An important aspect of accomplishing this aim is that of providing educationally-disadvantaged children with compensatory education that enables them to apply their capacities more fully. Of course, there is a multitude of "underachievers" drawn from all levels of society and all population groups who need the appropriate sort of compensatory or corrective education.

Assuming these aims to be valid emphases in the school's program, how do different organizational themes relate to realizing them? We shall examine first the themes that concern organizing the curriculum. Following Recommendations 19-22 of the Project on Instruction, there are about a half-dozen themes of curriculum organization.

According to Recommendation 20, the local leadership should determine priorities among the aims that the school system has decided upon. This means deciding the amount of curriculum content to be devoted to an aim relative to other aims, as well as the proportion of instructional resources and time to be used in working toward the aim. We note that the first three of the five aims listed above--teaching theory, inquiry, and independent study--all call for major changes in priorities as compared with the aims stressed in the typical school program today. Note that these aims call mainly for changing the emphases placed on different learning goals within any given curricular area (teaching theory instead of information, teaching the student how to learn science by himself, etc.).

Another organizational theme (see Recommendation 20) is to express curricular units in terms of specific learning outcomes desired. These outcomes are called the "behavioral objectives" of the unit. Such objectives obviously are different if one stresses the aims in the list above rather than placing stress on teaching vocabulary and facts.

A closely related organizational theme is that of developing procedures and instruments for evaluating pupils' accomplishments of the learning goals set forth in the school system's aims and specified in the list of desired behavioral outcomes (Recommendation 21). Nationally-standardized tests--whether those similar to the Stanford Achievement Tests that stress terms, skills, and facts, or those like the ETS Sequential Tests of Educational Progress that purport to stress problem-solving thinking--are inappropriate here since they are not designed to measure the behavioral objectives of the local school system's curriculum. A school system needs its own tests because it has its own curriculum.

Another theme is that of vertical curricular sequence. Recommendation 21 states: "In each curricular area, the vertical organization of subject matter should take account of: (a) the logical structure of the subject; (b) the difficulty of material as related to the student's intellectual maturity; (c) the relation of the field to other fields." This theme bears no clear relationship to any of the five educational aims listed above. However, the aim of individualizing instruction is fostered if, in addition to fashioning a vertical arrangement of learning units (whether linear or spiral), the sequence is constructed without grade-level boundaries. To facilitate nongraded advancement, the achievement measures used by the school system should not only be geared to the local curricular sequences but also should be set up in the form of subtests, one subtest for each level of advancement in a sequence.

A further theme of curriculum organization concerns the interrelations among the several curricular areas. As Recommendation 19 states: "Helping learners see interrelationships and achieve unity from the diversity of knowledge is basic to any organization of content." This theme bears no clear and necessary relationship to the accomplishment of any of the aims listed earlier. Presumably, if the organization of the total curriculum takes cognizance of the fact that some learnings in any curricular area have as prerequisites certain learnings in other areas, the former learnings will be accomplished better. In relation to this theme of interrelating the curricula in different areas, it should be noted that almost all curricular materials are written as though each curricular area stood alone. Also, it should be noted that, despite the stress placed on "the integration of learning experiences" by many educators, there is a lack of tests to measure such integration.

A final theme of curriculum organization concerns the age placement of learning units or topics. Recommendation 22 states that decisions about when to teach what should depend on more than the learner's ability to understand the material. Also to be considered is "the relative importance of alternative ways of using the learner's time at any given point in his school experience." This theme of age placement of material in the curriculum is presently of great importance because of some dramatic demonstrations of things that very young children can learn. Thus O.K. Moore has shown that children aged three or four can learn to read well and happily in the "responsive environment" offered by the "talking typewriter." Since reading is a main gateway to formal learning, and since there is no good reason to believe that children who learn to read when very young are harmed thereby, who would argue that there is a better way of using one half-hour of the child's time daily for a few months during his preschool years?

Consider also the demonstrations that children from the beginnings of primary school onward can learn algebraic reasoning and the rudiments of scientific methods of inquiry. Granted that this is so, isn't it more important to use the young child's time to teach him other things such as reading and spelling, or about community helpers? The answer to this question is "No" if the aims listed earlier in this section are to be followed. If the stress is to be placed on the pupil's learning theory and methods of problem-solving thinking within each content area, instruction in relation to these aims should be a part of his schooling from the earliest possible moment in his educational history. The purpose, it should be stressed, is not to teach formal algebra or physics in the primary school, but rather to teach mathematics and science with understanding and active participation from the very beginning.

We turn now to examine themes concerned with school and classroom organization in their relations with the aims listed at the beginning of this section. Recommendations 23-27 cover themes of this type.

Recommendation 23 deals with the theme of nongrading or continuous progress: "The school organization should. . . provide for differentiated rates and means of progress toward achievement of educational goals." The purpose of this recommendation is to take account of individual differences among pupils in the rates at which they learn and in the ways they learn best. In addition to giving increased recognition to individual differences, continuous progress fits in with the aim of having all pupils master a learning unit before proceeding to the next. This can be accomplished if slower learners are allowed to spend the time they need to learn a lesson well rather than being forced ahead with the purpose of meeting grade-level requirements. Nongrading also can enable gifted pupils to progress more rapidly in achieving educational goals than does the grade-level system. It does this by permitting rapid learners to move on to the next learning unit as soon as they master a given unit instead of asking them to busy themselves with enrichment activities.

Another organizational theme that bears on individualizing instruction is flexibility in instructional arrangements that provides for hour-to-hour, day-to-day, or week-to-week variations in the composition or size of pupil groups, in the uses made of learning facilities and materials, and in staff assignments to teach groups or individuals. Flexibility of these sorts is a prominent feature of numerous plans that bear the label "team teaching."

Individualization also can sometimes be aided by grouping together children who are relatively similar in achievement level, ability level, or in the ways they learn best. The Project on Instruction cautioned against the general use of ability- and achievement-level grouping (Recommendation 24). Instead, it favored a reliance on flexible grouping or subgrouping, proposing that "teachers should organize learners frequently into smaller groups of varying types and sizes, depending on educational purposes to be served at a given time." (Recommendation 27).

A prominent theme in school organization is that of specialization in teaching or in other staff assignments. New patterns of specialization are key features of numerous plans of cooperative teaching for elementary and secondary schools, and in semi-departmentalized plans for organizing instruction in the upper years of the elementary school.

Numerous team teaching plans, as well as the semi-departmentalized dual progress plan, employ specialist teaching of science, mathematics, English, and social studies in the elementary school. It may seem that specialist teachers in these areas would improve the teaching of theory and methods of inquiry by virtue of having a better grasp of subject matter in these fields, and greater interest and skill in teaching their chosen fields, than the general elementary teacher possesses. However, merely assigning elementary teachers as specialists does not ensure that learning goals such as teaching theory and inquiry will be achieved better than previously. The specialist elementary teacher of mathematics, science, English, or social studies may present more credits in liberal arts and professional education course work in his curricular area than is true, on the average, with the general elementary teacher. However, most liberal arts courses do not teach theory or inquiry well, and few education courses or student-teaching programs do a good job of showing how to teach in terms of theory and methods of inquiry. An advantage of specialist teaching at the elementary level is that in-service education can be concentrated in one curricular area. This means that, if appropriate preparation for teaching theory and inquiry in his curricular area is available, the specialist teacher is in a better position than the general elementary teacher to take advantage of it.

In recent years there have been introduced several forms of staff specialization other than in curricular area taught. The role of TV teacher is one. This teacher is selected for his special knowledge of subject matter and his ability to plan and teach televised lessons. He is given time free from other duties to prepare thoroughly for each televised lesson. In team teaching, the role of large-group teacher is similar to that of the television teacher except that the former speaks directly to his class and does not have the special visual supports that TV offers (though he can use films, film strips, and overhead projectors). Both the TV teacher and the large-group lecturer would appear to be at a disadvantage for teaching theory and inquiry because their classes are placed in an audience situation. Also, they clearly are at a disadvantage for individualizing instruction.

When a pupil studies different subjects with different teachers, arrangements are needed for interrelating different parts of his instructional program and for intercommunication among the staff members who work with him. Recommendation 26 specifies that each student should be offered "a close counseling relationship with competent teachers who know him well." The organizational arrangements that serve this purpose include having a guidance specialist whose job is to help plan the pupil's total program, to keep abreast of his progress and problems in different parts of his program, and to work with his teachers to ensure the integrity of his total school experience. The use of homeroom teachers as integrators of the pupil's total program is another way of trying to express the organizational theme of program unification. In team teaching, the team leader often is assigned the task of knowing each pupil in the team and ensuring that his program has unity. In future, it is probable that a computer-based information system within a school will resolve many problems of communication by making any information the school has about a child, his program, his progress, and his problems immediately available to any staff member.

The several organizational approaches to achieving unity in the child's school program bear no necessary relationships to improving the instruction he receives in relation to theory, independent study, inquiry, or mastery. They would seem to foster the individualization of instruction in the sense of adapting the pupil's program to what is known about him by any of his teachers. However, such adaptation will not be successful unless the members of the staff speak an explicit, common language about educational goals, about the characteristics of a child that influence his responses to different learning situations, and about the essentials of the instructional program in terms of such goals as teaching facts, theory, and methods of inquiry. If staff members lack this common language, their knowledge about a child cannot be brought to bear on arriving at an integrated conception of him and on planning a total program that is suited to his characteristics as a learner and person.

The final organizational theme we shall consider is that of teacher cooperation in planning and conducting instruction. The most highly developed expressions of this theme occur in some of the plans for cooperative or team teaching. Recommendation 25 of the Project on Instruction states: "Well-planned cooperative efforts among teachers--efforts such as team teaching--should be encouraged and tested."

In team teaching plans, two or more teachers share responsibility for the total instructional program of a large group of pupils. The teachers in a team ordinarily specialize in teaching one or two curricular areas. There may be teacher aides to perform non-professional duties. Often the team has a hierarchical structure with a formally-designated team leader. Whatever the membership and structure of the team, its key characteristics are found in its provisions for teamwork in planning, in teaching, and in evaluating and reporting pupil's progress. The greatest amount of teamwork occurs in planning lessons, assigning pupils to large or small groups depending on their immediate learning requirements, assigning teachers to specific instructional tasks, and making the needed arrangements for the use of space, equipment, and learning materials. Much planning of these types occurs on a weekly, at times a daily, basis. Another important area of teamwork occurs when a new teacher joins the team. The team leader or an experienced member of the team takes charge of the new teacher's orientation to teamwork as well as offering needed training and supervision in teaching.

From this sketchy description of team teaching, it should be clear that cooperation between or among teachers offers no guarantee that instruction will be improved in relation to any of the aims we have been considering. If members of a team already know how to teach theory and inquiry, and how to individualize instruction, the team organization should help them do a better job of teaching toward these aims because of the rich opportunities it provides for joint planning, for specialization in teaching, and for great flexibility in making arrangements for teaching pupils in the team.

The review we have made of the relations between organizational themes and educational aims can be summarized by concluding that, in the main, organizational arrangements offer secondary and indirect approaches to improving instruction in relation to such aims as teaching theory, developing competencies in inquiry and independent study, and individualizing instruction. The organizational arrangements that are most closely related to these aims have to do with setting curricular priorities, defining educational goals in terms of desired pupil behaviors, setting up well-defined curricular sequences, and providing achievement subtests geared to the local school system's learning goals and to the units or levels in its curricular sequences.

The themes of school or classroom organization--continuous progress, flexibility in instructional arrangements, teacher specialization, and teacher cooperation--simply offer improved opportunities for teachers to use the competencies they possess in planning and conducting lessons that are directed toward certain learning goals and designed to meet the learning needs of the pupils they are teaching. For example, consider continuous progress plans that are designed to permit pupils to advance in a curricular sequence at whatever rate they can master successive units in the sequence. Such plans cannot be implemented unless teachers know how to use tests to determine the level in the curricular sequence each pupil has reached, unless they can plan lessons suited to the learning needs of different children, and unless they can conduct instruction in ways that take into account differences in pupils' rates and methods of learning. In short, teachers must be competent in planning and conducting individualized instruction before they can make a continuous progress plan work.

To take another example, teacher teamwork depends especially on teachers speaking an explicit, common educational language about the behavioral objectives of instruction and about measures of pupils' achievements and characteristics as learners. Also, they need to have a common understanding of lesson planning for individualized instruction that employs flexible arrangements in scheduling, grouping, staff assignments, and the uses of learning materials. Since most teachers, like most others in education, lack this common language and these common understandings, teacher teamwork ordinarily falls considerably short of its potential.

Developing local capabilities for making organizational changes

This section is intended to sketch out the steps a school system should take in preparing itself to design and conduct its own educational change programs with little outside help. The assumption basic to this section, as stated near the beginning of this paper, is that local programs to adopt innovations depend for their success largely on whether a school system's leaders and teachers develop professional capabilities in deciding the directions local change projects are to take, in planning appropriate change programs, and in carrying these programs out effectively. (Frequently a school system's staff will be too small to develop these competencies fully; in such cases, an association of neighboring school systems, perhaps at the county level, would be an appropriate agency for leading the change programs of its members.)

The approach recommended here, it should be noted, rejects the current basis on which most school administrators, according to Brickell's analysis, decide about adopting innovations and go about planning and conducting programs to implement innovations they have decided to adopt. What is being rejected is the prevailing superficial and piecemeal approach to change in which innovations tend to be tacked onto the ongoing program; the selection of innovations largely on the basis of seeing them demonstrated in schools very like one's own, with smiles on children's faces used as the chief evidence of success of the demonstration; and the failure in local change projects to provide the fundamental training school leaders and teachers need if they are to realize the purposes of the innovation in the actual conduct of instruction.

How should a school system go about developing capabilities in introducing changes in organization for instruction? As was proposed earlier in this paper, the system's leaders should not start out with a concern about making organizational changes but rather with an examination of instructional aims and an appraisal of current successes and failures of the instruction program to realize those aims. It is suggested that CSI, in this project, select the school systems that are to serve as demonstration centers on the basis of their agreeing to approach innovations in curriculum content, in tehcnology, and in organization for instruction strictly in relation to improving the accomplishment of instructional aims that the contracting parties mutually accept to be fundamental.

This writer recommends that the five aims listed earlier in this paper be adopted as the target objectives of the school systems' improvement programs. Upon examination, the five aims will be found not to be discrete but, instead, to be intimately interrelated. (1) Teach theory since understanding concepts, principles, and theoretical models is what permits explanation, prediction, and control of phenomena; (2) Teach methods of inquiry since theory is learned best when approached with the methods that are used in developing and testing it. (3) Teach competence in independent study since this enables the pupil to conduct his own inquiries and gain the knowledge he needs or desires in whatever situation he finds himself. (4) Set standards of mastery in all areas of study and hold pupils to them to ensure that they learn theory, methods of inquiry, and independent study skills well enough to employ them with sureness and success. (5) Individualize instruction to fit the specific goals, methods, and pacing of the lesson to what the pupil already knows and to his characteristics as a learner. Do this in order to ensure that each pupil achieves mastery of theory, inquiry, and independent study.

In developing their capabilities in working toward these aims, a school system's staff members must first acquire an explicit and detailed working definition of each aim. Without operational definitions of instructional aims, the staff lacks a basis for making independent professional decisions about instruction. When staff members possess such definitions of the school's aims, they are in a position to work effectively together in designing and implementing changes in the content, organization, and procedures of the instructional program.

Explicit definitions of aims lead directly into selecting or developing ways of measuring the degree to which each aim is being accomplished. The school's staff should formally take this step as part of the process of developing a functional understanding of the objectives of the instructional program.

At this point, the consideration of curriculum content and organization is appropriate since the curriculum translates definitions of learning goals into the working materials of instruction.

Logically the next step is the analysis of instructional procedures and techniques that will bring pupils and curriculum into effective relation. This step calls for a local study of teaching: pretesting pupil's achievement of lesson goals, diagnosing pupils' learning needs, lesson planning, techniques of individualizing instruction, etc. Also, it calls for finding ways of providing the school system's teachers with the requisite professional skills for guiding all pupils' learning toward the school's learning goals.

To this point, the recommended approach has concerned the fundamentals of instruction that underlie any type of organization for instruction. In general, it is held that a school system's staff should not consider any new plan for organizing the school until these fundamentals (instructional aims, curriculum content and organization, tests, methods of teaching, and in-service teacher education) have been dealt with. An exception to this rule might be to introduce teacher specialization in the elementary school to make it easier for a teacher to learn to teach theory and inquiry in his chosen field by permitting him to concentrate on that field. Another exception might be to introduce provisions for teacher teamwork to facilitate the training of beginning teachers in relation to the school system's aims.

When a school system's staff members have made sufficient progress in acquiring sophistication and competence in the fundamentals of instruction, it is time for them to consider new patterns of school or classroom organization. The approach recommended is to select those organizational themes that are judged to be important in relation to one or more of the five aims, work out a design for an organizational scheme that incorporates all of the themes selected, then undertake an intensive program of study and training to prepare staff members to install the new plan.

As a start, these themes are suggested for consideration in organizing the school and the learning group: continuous progress; flexibility in scheduling, grouping, uses of space and equipment, and teacher assignments; new patterns of staff specialization; the use of teacher aides, pupil teamwork; and teacher teamwork. If the reader believes that this array of organizational themes is too extensive for a school system to adopt at one time, two rejoiners are in order. The first is that a school system is a system of many interacting components and one feature of the system cannot be altered without changing numerous other features. The second, and most telling, rejoiner is that the organizational themes listed above reinforce one another; adding a theme can make it easier to implement other themes. Teacher aides, for example, can give teachers more time for planning and teaching, and can promote the sorts of program flexibility needed for conducting nongraded instruction. Provisions for independent study and pupil teamwork also can free teachers for planning and for work with small groups or with individual pupils. (Note that a number of plans for cooperative teaching--the Lexington Plan and the Norwalk Plan are examples--incorporate almost all the organizational features we have listed above.)

This section has dealt in sketchy fashion with the question: How can a school system develop capabilities for planning and conducting organizational change programs? The proposal that has been made calls essentially for a program in staff education. School systems, it seems safe to say, have neither a conception of the need for such a program of self-education nor the capabilities for planning and conducting it. It is doubtful that educational leaders in universities, or in state or national agencies, are capable now of offering school systems the guidance and help they need. The answer is for agencies such as CSI that are concerned with the dissemination of innovations to undertake the R&D task of designing, constructing, implementing, testing, and disseminating educational programs whereby school systems can develop capabilities in planning and conducting change programs.

A central part of this R&D problem deals with the selection, training, and utilization of members of the school system's staff who have responsibilities as leaders of local change projects. There is a number of key functions that must be performed by local personnel if the school system is to be effective with its innovative programs. These functions concern curriculum, diagnostic and achievement testing, teacher education, administrative planning, and program evaluation. Perhaps new positions in school systems should be established to serve these functions. Perhaps, however, they can be assumed as part of existing positions such as curriculum coordinator, director of instruction, guidance counselor, school psychologist, and research director. Whatever decision is reached on this issue, there will be a need for clarifying the functions of local change agents, for selecting and training persons to fill these functions, and for making organizational arrangements in school systems that permit these functions to be carried out effectively.

Field testing innovations at demonstration centers

Brickell, in his analysis of educational change in New York State, makes a sharp distinction between evaluation and dissemination. He makes the very reasonable assumption that an innovation should be evaluated before it is disseminated. He indicates that evaluations should be conducted in a considerable number and variety of field settings since it is reasonable to assume that the outcomes of an innovation will vary from one type of school system to another.

If Brickell's proposals were followed, this CSI project would probably have little business to conduct since it is doubtful that any innovation has been put through the full evaluation program that he recommends and there are reasons to doubt whether his approach ever will be applied fully with more than a very few innovations. Certainly one cannot say that cooperative teaching, or the nongraded primary school, or the dual progress plan, or the Trump Plan, has yet been tried in a variety of school systems under conditions where the features of the plan and the manner and degree of their implementation were held constant from one place to another or, in the same place, from one year of the tryout to the next. In view of this situation, the CSI demonstration center necessarily will be involved with innovations that have been taken only part of the way through the design-construction-implementation-evaluation process.

In curriculum, school, and classroom organization, it probably is incorrect to speak of innovations as though they were products having a fixed set of characteristics, with all copies of the innovation appearing to have been stamped out of the same mold. Taking a lead from those educational reformers who like to compare education with agriculture, we note that innovations in education usually are not analogous to a new variety of seed corn but, rather, are analogous to a change from horse-drawn to tractor-drawn farm machinery. No two farms that adopt tractors to draw implements or pull stumps do so in quite the same way. Similarly, no two school systems have quite the same version of team teaching. Since school systems always will employ organizational arrangements in idiosyncratic ways, it follows that the implementation and evaluation of organizational innovations will need to occur at least in part as an aspect of the dissemination process.

An important function of the CSI and its consultants is to work out ways for school systems that employ an innovation to contribute to the further development of that innovation. This requires an R&D orientation on the part of the school system. Careful feedback information on the problems of implementing the innovation should be gathered and used to modify the design of the innovation or to modify the procedures employed in implementing it. Further, systematic data on outcomes of the innovation should be gathered and analyzed. CSI can serve an important function by disseminating findings of local tryouts of innovations to school leaders across the country.

If the demonstration centers are to contribute significantly to the field testing of innovations, they will need to have considerable sophistication in procedures of field testing. Developing such sophistication should be an important part of the process of developing competencies in planning, conducting, and evaluating local change programs as discussed in the preceding section of this paper.

To be valuable, field tests of an innovation must do more than measure outcomes. Equally important is taking whatever steps are needed to implement the innovation fully, and to measure the extent of its implementation. To interpret measures of outcome, they must be related to measures of implementation and to measures of characteristics of both the pupil population and the school system that may have important influences on outcomes. It should be noted that field tests that include measures of implementation are rate in educational research; ordinarily, the researcher describes the innovation and says how it is supposed to be used without going into classes to measure the innovation in action. With many organizational innovations, the structural features usually are placed in effect but the changes in instruction that are intended often do not occur. Thus a nongraded primary plan may be installed in the structural sense of erasing grade lines in the curriculum, removing grade labels from children, and setting up multi-age groups. However, teachers may continue teaching pupils as though they still were in grade-level classes.

A highly important function of the demonstration centers should be to add to our understanding as to which tasks related to innovations can be performed by school systems and which should ordinarily be performed by outside agencies. In the areas of organizational change, it would seem that most problems of curriculum organization should be dealt with outside the school system. Thus, the development of curricular units and sequences calls for a high level of knowledge of subject matter and technical skills in curriculum building that ordinarily would not be possessed by local school personnel. Major curriculum development projects can accomplish such tasks better than any but the largest school systems. Also, the development of tests to measure the accomplishment of learning goals set forth in the curriculum is a highly technical task that usually should be performed by outside experts, preferably by test development specialists who are members of curriculum development teams.

Deciding priorities among instructional aims must remain a local function. The school system must decide for itself, within the limits set by state and local authorities, what is to be taught, to which pupils, and when. Also, provisions for interrelating different areas of the curriculum must be made locally since such provisions depend upon the topics and sequences the school system adopts in the various curricular areas.

As was suggested earlier, a school system should not attempt to adopt ready-made plans for school or classroom organization. Instead, the local leaders should concern themselves with certain themes (teacher specialization, continuous progress, etc.) and should work out a way of employing the themes selected to fit the characteristics of the school system's program, its pupil population, its staff, and its plant and equipment. The local staff should become competent in examining organizational themes in relation to its instructional aims, evaluating the various innovations that have been developed to put the themes to work, and planning a change program that makes use of the innovations that appear to meet local needs. If the school system's staff is not competent in these ways, it will probably be unable to implement the organizational changes effectively. The problem, then, is one of staff education rather than one of seeking outside help to plan and implement changes in school or classroom organization.

A role for CSI in professionalizing educational change programs

CSI is in a strategic position for shwoing the leaders of the nation's schools, as well as educators generally, how to build a sound foundation for the dissemination of innovations. This foundation must be built in each school system or association of neighboring school systems. CSI's task, if the proposal offered in this paper is accepted, is to design, construct, implement, evaluate and disseminate programs whereby the school system's staff develops capabilities in designing and conducting its own change programs. Also, CSI should conduct R&D projects on how a school system can organize itself for undertaking change and how it can staff itself with change agents having special competencies in such areas as curriculum, tests and measurements, staff education, learning materials and media, and organization for instruction. It is recommended that CSI use this approach in relation to all varieties of innovation, including changes in curriculum content, in learning materials, and in facilities as well as changes in the organization of curriculum, classroom, or school.

The view that local school leaders and teachers can become competent in relation to selecting and employing innovations stands in sharp contrast with the view held in some quarters that schoolmen are relatively ignorant and resistant folks who must be shown the way, the truth, and the light by outsiders who come with both the faith and the works of educational reform. The trouble is that it takes a wise and competent school leader or teacher to make effective use of any innovation. Educational reform is never going to occur in a fundamental way in the nation's schools until the staffs of school systems are highly competent in all those matters that make a sound and effective instructional program.

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EVALUATING PUPIL PROGRESS IN EDUCATIONAL ACHIEVEMENT

Esin Kaya

Educational achievement has two main connotations. A person achieves, first, the knowledge and skills required for him to be a functioning member of the society in which he lives. Second, he achieves special knowledge and skills which are unique to himself and are determined mainly by his capabilities, needs, and interests as well as the opportunities provided for him by his environment. The first type of achievement is common to all functioning members of the society and the individuals who do not meet the required criteria are considered non-functioning and are institutionalized either for corrective or remedial purposes. The second type of achievement is unique for each individual and is apparent in his professional and recreational pursuits; to the extent individuals share personal characteristics and qualifications they are brought together in groups or institutions of either training or recreational activity. In view of these two types of educational achievement, evaluation of pupil progress needs dual consideration.

Evaluating Educational Achievement Against Established National Criteria

In the way it is conceived here, evaluation of whether or not requirements of society have been attained predicates that (a) these requirements be clearly specified in behavioral terms, (b) the curricular sequence for various ages be specified in such a way that mastery of each level in the sequence is a prerequisite to the learning of the next level, (c) all pupils are tested as groups at regular intervals and those who have mastered the criteria of a given level are advanced to the next with no further differentiation in degree of mastery resulting in a binary grading system of pass or fail. Under such a system those who fail at a level would be kept at that level until such time as they pass it. If, by the time they reach the maximum age in compulsory education they have not completed all the requirements, they would be transferred to a remedial institution.

The type of evaluation described need not concern such personal traits as ability or interest even though the educator, i.e., the teacher, would certainly take these individual traits into account in the process of educating. Rather, such evaluation would be most concerned with the learning and retention, over a long time period, of knowledge and skills which may be applied in behavioral performance. For example, if an adult is expected to vote after having obtained the necessary information about the candidates and their proposed policies and having analyzed the information in view of his social and personal needs, the evaluation should be concerned with whether or not the individual performs in the required manner at the time he graduates from high school.

The Exploratory Committee on Assessing the Progress of Education under the chairmanship of Ralph Tyler has undertaken the task to explore and consider a program of national assessment of educational progress. The committee considers national assessment in part as the evaluation of groups and communities, rather than of individuals, in order to diagnose the current status of American education. Such activity would fit into the proposed scheme in this paper as the first step in determining and specifying the national requirements for all individuals. According to what is proposed here, the results obtained through the exploration undertaken by this committee would be utilized to specify the minimal requirements for the nation.

The issue of national versus local policy-making in determining educational objectives has been traditionally subject to argument. While ours is a nation of great diversity and variation, it is also a nation of unity and common purpose. The educational criteria which in part result in the national unity need to be identified and specified without hurting the unquestionably advantageous diversities. In order to do this adequately, alternative curricula need to be studied in detail, and both the similarities and differences among them need to be specified. Identified similarities could then lead to the establishment of national criteria, while the differences desired by local states and communities could be retained for local objectives to be added to the national ones.

Currently educational objectives are ill-defined at any level. The objectives are ultimately represented in the curricula which are prepared. The current curricular reform in America indicates that the problem of what to teach has never been adequately solved. It is doubtful that the current trend to create more alternative curricula is the answer, since it may lead to a trial-and-error selection of particular curricula, without the necessary examination of whether or not they meet the desired objectives specified independently of the curricula themselves. The main problem is not to prepare or select new curricula, but to specify educational objectives in behavioral terms which are both realistic and acceptable.

In the process of exploring national assessment, the Committee on National Assessment will undoubtedly obtain valuable information related to various curricula, and requirements. An important topic for which such information gathering could be extremely valuable is the sequential arrangement of curricular requirements. Since the Committee plans to evaluate the groups of various age levels, alternative sequential arrangements of curricula may be identified, which then may be tested to determine the best sequence.

Doubtless a great deal of social and educational research is implied in what is proposed. However, it must be recognized that until these problems of educational objectives and curricular sequence are adequately solved, educational evaluation on a national level as is currently practiced can only add to the confusion. Tests which are in current national use have little, if any, validity to any set of objectives used by any given teacher. In fact, the nationwide use of a given test when there is no national curricular sequence is the greatest absurdity in educational assessment. Perhaps it provides the justification for all current criticism against standard achievement testing.

The current scene of educational assessment seems ready for a substantial change. The efforts of leaders in the field lead one to believe that change with a purpose and design may not be too far in the future. Since the current standard achievement tests are recognized more and more to have little, if any, diagnostic value in the evaluation of pupil achievement, educational evaluators have to work fast to fill the vacuum created, or face the consequences of having virtually no valid and reliable evaluation of educational achievement.

To summarize, in order to have educational evaluation congruent with the requirements of society, the minimal national requirements yet need to be specified, the prevalent curricula need to be studied and arranged sequentially in a manner socially acceptable and psychologically sound, and valid evaluative instruments need to be devised to accompany the prepared curricula. Some current efforts have been started in this direction; however, given the current status, a greater rate of production on a national level seems imperative.

Evaluating the Individual's Achievement Against Criteria Unique to Himself

Evaluation means the correct interpretation of data collected from many sources with reliability and validity. It is more than measurement, which is often part of data collection, since it involves the correct interpretation and assessment of the data collected. The act of evaluating should always be guided by the purposes of the evaluation, and the collected data should be assessed in terms of those purposes.

Generally, diagnosis of pupil traits and prognosis of the pupil's future performance on the basis of an obtained profile would describe the purposes for evaluating an individual's educational achievement. These purposes imply that both the diagnosis and the prognosis are conducted with accuracy. In reality, schools experience important problems concerning both diagnosis and prognosis. These problems stem from several factors which will be discussed below in some detail, and for which some solutions will be suggested.

The first problem is that there are not enough valid and reliable tests of traits in which the educator is interested. Schools diagnose traits for which measures are available. The relevance of the test employed to the trait for which a measure is desired is rarely questioned. Since the test is often accepted as the operational definition of the trait measured, the educator who is often the interpreter of test results takes the construct validity of the measure for granted. For example, a standard achievement test is generally accepted as a diagnostic measure of achivement, when it may be more relevant to ability than to achievement.

Moreover, the relations among traits are not clear. In Bloom's Taxonomy of Educational Objectives: The Cognitive Domain, many of the educational objectives are listed as "The ability to . . .," implying that ability to do something is part of achievement. Yet, a psychologist is more likely to define ability as the rate of learning, and achievement as the amount learned.

To the educator the relation between the traits he needs to evaluate and their tests is unclear. The relations among the traits to be measured are even less clear. It is not surprising that school personnel find themselves in a predicament of having to interpret data they do not fully comprehend.

To insist that psychometricians develop more and better tests before an individual's achievement may be evaluated is the only path to the ultimate solution. However, the need for adequate evaluation of the individual is too urgent to wait for this long range solution. The educator must do what he can with the available measures, and can benefit from suggestions for their valid and reliable use in diagnosing traits.

First, it should be recognized that there are available many "good" tests, so long as they are employed in the context for which they were developed. Tests accompanying specific curricular materials are examples. It is true that some tests such as the Stanford Binet Intelligence Test have had invaled interpretations; but the misuse of a test does not make it invalid for what it was meant to measure. If the interpretation of I.Q., for example, is limited to only some aspect of intellectual functioning, it could be very useful in a battery of measures related to other aspects of the intellect.

Second, when the purpose is to diagnose a number of traits such as aptitudes, interests, and achievement motivation in order to obtain prognostic data for the individual, each trait should be measured by a number of different tests. The mentioned traits are very complex ones. Each one, by virtue of being an inferred construct, has many different behavioral manifestations. Each of these behavioral manifestations could be considered a different variable to be measured. When all those related to the same trait are combined, they would give a complete diagnostic picture of the individual's standing in relation to the trait. Thus, a multivariate approach to the evaluation of any given trait would increase the validity of the obtained information.

Third, all the traits whose measurement is desired in order to obtain a complete diagnostic profile for a given individual need to be specified. Such specification is a social and philosophical problem rather than psychological. However, a number of traits, such as motivation, emotional maturity, flexibility, intellectual abilities including inductive and deductive reasoning, divergent and convergent production, different types of interests, parental expectations, and many others have been identified through research as variables that have an effect on achivement. Individuals could be evaluated on such traits, and profiles very useful for the prediction of the individual's future performance could be developed.

Prognosis based on questionable diagnostic results as those that currently exist would be inadequate in any event. An added problem concerning the prognosis of future performance stems from the fact that school personnel are rarely trained in interpreting nomothetic data for idiographic purposes. For example, if an individual is one standard deviation above the mean on an interest test, what should be his future performance on an achievement test? In current practice the data may be interpreted at best as, "the child is an underachiever and should be encouraged to do better." In other words, the interpretation is only diagnostic and prescriptive, it is not prognostic. In order to make an adequate prognosis one would need more information about the individual, and would need to relate the information to the prescribed course of training. After obtaining sufficient data and relating them to the training one could predict what the pupil's performance on the next achievement test should be.

The collection of sufficient information to make adequate prediction requires that both nomothetic and idiographic measures be utilized for the same individual. In addition to the measures obtained from standardized tests, judgments of those who are familiar with the individual's behavior in various situations and the individual's self-evaluation need to be considered. There are two main reasons for including such judgments in the total diagnosis. The first reason pertains to the lack of adequate standard tests in all the traits for which measurement is desired. The second reason is that the relationship between paper-and-pencil tests and actual behavior has never been studied satisfactorily. While the tests may be good predictors of behavior, it is not clear that they represent behavior in real life situations. Adjustment at home and in school, aspects of social and emotional maturity, amount of time spent on a given activity, the types of peers the child associates with, the ways in which he spends his recreation time are all examples of variables for which paper-and-pencil tests are highly inadequate. It is possible for psychometricians to develop tests to measure these variables, but at least currently, it seems that one needs to depend on judgments for their evaluation. Doubtless judgments can be quantified, and there are psychometric methods which may be utilized for their adequate quantification.

The use of judgments as evaluative measures raises the question of who should be the judge. More important, however, is the question of who should interpret all of the diagnostic data obtained both from the tests and from the judges. It was mentioned earlier that judges should consist of people familiar with the individual's behavior, but how all the data are to be combined and prognostically evaluated needs to be elaborated.

It is proposed that the multi-judge approach to evaluation is important not only in obtaining the desired data, but in interpreting them as well.

Almost all data obtained for diagnostic purposes must necessarily be relative. In other words, the measures for a given individual represent his relative standing among his peers. They do not indicate how much he has of any given trait in absolute terms. For example, an I.Q. of 50 does not mean no intelligence. If intelligence measures were obtained from a group and the distribution plotted showing a given individual to be three standard deviations below the mean, and if constant stimulus was then applied to raise the intelligence score of all individuals in the same amount, the individual would still be three standard deviations below the mean, but his intelligence in absolute terms would be greater than his intelligence prior to the application of the constant stimulus. In relating the information obtained nomothetically to predicting what any given individual will do at a future date, the evaluator must be assisted by judges who can interpret the data in ways to minimize the relativity. These judges must again include the people familiar with the individual's behavior and the individual himself. For, while normal distributions obtained from tests extend to infinity and have no absolute limits, behavior may be observed by judges as either existing or not existing.

A question may be raised as to why the nomothetic data need to be interpreted in absolute rather than relative terms. It was mentioned earlier that an individual's achievement is necessarily unique to himself and therefore should be evaluated in terms of what might be expected of him. Statements relative to a group are not predictors of idiographic criteria. For example, if a pupil is two years above grade level in reading at the 6th grade, should he also be two years above grade level at the 8th grade? If a linear relationship between grade level and reading achievement exists, the described prediction might be justified. It is also possible, however, that the relationship is curvilinear; that is, if the pupil is two years above grade level in the 6th grade, perhaps he should be three years above grade level in the 8th grade. Or, perhaps, as one gets older reading achievement becomes a decelerating function. The existence of a curvilinear relationship would render the prognosis based on the assumption of a linear relationship between grade and reading achievement altogether useless.

Another reason why nomothetic data cannot be usefully predicted is that individuals progress at differential rates. The prediction of nomothetic scores assumes that all individuals progress at the same rate as they have in the past. This assumption can hardly be justified. If Johnny in 6th grade has a reading score two years above grade level, and if Mary suddenly accelerates her rate of progress but Johnny keeps a steady rate, Johnny is likely to get a nomothetic reading score which is lower than two years above grade level, even though he has progressed as expected.

Since prognosis of an individual's future behavior cannot be made in nomothetic terms relative to the group, it becomes essential to translate all diagnostic information into behavioral terms for idiographic prognosis. For example, rather than predict that Johnny will read at the 10th grade level when he is an eighth grader, one needs to predict what specific types of books Johnny should in fact read and comprehend in the 8th grade. The nomothetic data, then, are useful mainly as predictors but not as predictions.

Once the criteria against which the individual is to be evaluated are established, the process of evaluating his individual achievement would consist of comparing what he does at a given time in his life with what he is predicted to do. Since the predictions will always contain errors of measurement, effort should be made to minimize these errors not only by having a number of judges make the prediction as was discussed earlier but also by using valid and reliable diagnostic information. It should be recognized, however, that errors will exist in any event, and allowance should be made for such possible errors in the final evaluation of the individual through the use of probability theory.

To summarize, in evaluating an individual's achievement of those criteria which are necessarily unique to him, two main concerns are diagnosis and prognosis. Diagnosis must be made by a multi-trait, multi-variate, and multi-judge approach utilizing both nomothetic and idiographic data. Prognosis must be based on the diagnostic information but must be stated behaviorally in idiographic terms. The person's achievement is then to be evaluated in terms of how closely he comes to performing the predicted behavior at the predicted time with an allowance for the probable errors of measurement. In order to minimize errors of measurement and judgment, a multi-judge approach to determining the behavior to be used as the criterion is recommended.

The Use of Pupil Achievement Data in Evaluating Educational Programs

Currently the use of pupil achievement data in evaluating educational programs is highly inadequate. One is reminded of the minister who has lost his church keys behind the church where it is dark but insists on looking for them under the lamp post where it is light. Pupil achievement data have become one of the main criteria for evaluating the desirability of an educational program even when the objectives of the program may have nothing to do with what the tests measure.

A consequence of such inadequacy may be the unjust evaluation of some programs and an overrating of others. For, programs which are designed to emphasize variables other than academic achievement as measured by the standard achievement tests yield no significant differences in the achievement scores, while programs which emphasize obtaining high scores on these tests sometimes show rather significant increases in test scores. Moreover, regardless of the objectives of a program, teachers may feel obligated to teach for the test if they know that the final evaluation criterion will consist of the achievement test results.

If the position presented earlier in this paper is implemented, it should have some important implications for the use of achievement data in evaluating educational programs. The purposes of this paper do not include an elaboration of how to evaluate programs in schools. Therefore, the discussion below will be presented concisely to illustrate how the proposed methods of evaluating pupil achievement could be useful in education. The detailed elaboration of some of these points is seen as not being in the scope of this paper.

First, if minimal national requirements exist and are used as criteria in a nationwide evaluation program, comparison of programs may be possible. An important condition which enables such comparison is the comparability of objectives which results in the legitimate use of the same tests in all programs. The problem shifts from a competition in objectives to a competition in the best way to achieve those objectives.

Another important condition which enables the comparison of programs is the existence of large numbers of school systems with similar objectives. The usual pattern in conducting field experiments in education is the selecting of a control and an experimental school system matched on a number of variables. Such experimental control is hardly adequate since many of the relevant variables to be controlled are rarely known, let alone satisfactorily controlled. The best way to control many variables without experimental design is to randomly select a large number of school systems. However, if the school systems do not have similar objectives such selection would be of little use also. If the schools have similar objectives, and if all schools are trying out programs to achieve those objectives then the selection of large numbers of schools at random becomes possible.

Second, in the case of those objectives which extend beyond the national requirements, local systems could use individual achievement records before and after an educational program as the basis for their evaluation. For example, one would no longer ask, "Does this program improve creativity?" Instead, the question would be, "Do individuals under this program attain their expected criteria more closely than individuals under another program?" The main difference between these two questions is that the first is not answerable in any event, and the second may be answered by a simple comparison of percentages. Moreover, in the first case emphasis is placed on a single variable, while in the second case emphasis is one the individual despite any given variable.

General Summary

Evaluating educational achievement has been considered as a function of (a) the attainment of minimal national requirements and (b) the individual's attainment of expectations unique to him. The limitations of current practices in evaluating educational achievement have been discussed in relation to both aspects mentioned and specific solutions have been proposed within the context of the dual approach. The application of such a dual approach to evaluating various educational programs has been briefly discussed to illustrate the implications of the dual approach for educational evaluation in general.

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GUIDELINES FOR SELECTING LEARNING ACTIVITIES AND MATERIALS FROM LIBRARY RESOURCES

John Rowell

Assuming that an improved curriculum involves a refocus of purpose, teaching techniques, content, emancipation from the cloister of the classroom and the textbook, and staff utilization, we also assume that there will be a refocus on the function and form of the agency that purveys the supporting learning resources. That agency within the school district which coordinates the activities of materials' selection, organization, administration, and guidance in the use of the materials is the school library. The concept of the library has changed with its function: it is a multi-media resource center and learning laboratory providing the materials, services, and stimulation to learning commensurate with the purposes and practices of the total educational philosophy and program of which it is a part. As such, it has grown beyond its traditional function of supplying recreational, supplemental, and short-reference print-oriented resources.

Recognizing this shift in attitude and in the need for a wider scope of cross media instructional materials on a broader base of subject areas, the traditional producers of traditional library materials have also regrouped. Through the incentives of genuine concern for improved instructional materials and a recognition of a rich market for appropriate instructional materials plus the means of modern technology to manufacture and promote them in awesome variety and quantity, these producers have created as many problems for the consumer as they have resolved. The educator is faced with paralleling this curriculum and his highly individual requirements with new and staggering amounts of learning resources being made available to him. How the schoolman is to deal with this proliferation of materials with any semblance of professional and economic competency, is, for all practical purposes, beyond the ability of his individual staff members--supervisors, teachers, and even his "media specialists."

However, once selected, these resources continue to create problems. Even expertly selected materials are valueless unless they are immediately accessible with fine-tuned accuracy of matching the instant requirement with the pre-selected resource. This demands precise organization of materials, functional housing, calculated retrieval, and the services of a skilled operations director.

Patterns of library organization vary as greatly as do the curriculums they reflect, tempered with--as they usually are--limitations resulting from:

geographic distribution
plant restrictions
inherited organization patterns
degree of administrative support
financial resources
skills of the staff
imagination

The common purpose, however, is to bring students, teachers, and learning resources together and to guide them all in the best use of those resources.

To determine how best to build toward this purpose, it is important to consider the concept rather than the technicalities first. An interdisciplinary approach to teaching has its analogy in the multi-media formats of the teaching tools. Where these media are housed within a building or a district is far less important than how and why they are to be identified and retrieved. What is central about the instructional materials center is not necessarily the materials, but the means of identifying those materials. The means, the indexes, whether they are in the form of card or book catalogs, lists, or on computerized tapes, must bring together, describe, and locate all available materials on the investigated subject, and they should be of such sophistication that the "see" and "see also" references provide suggestions for further investigation on related subject areas which stimulate the user to self-accelerated exploration.

The library may or may not house all or part of the book and other printed resources collection. There may be permanent or semi-permanent print collections in classrooms or study centers within a school's departments, e.g., science, vocational education, music education. But there will be a centralized index to all of these printed materials, and that index should be in the library and maintained by the library staff.

The library may or may not house all or part of the audiovisual resources and equipment. Again, classrooms, floors or wings of a building, or departments may have their own permanent or flexible collections and machines. But the index to these materials will be centralized and accessible to all potential users. The instructional materials center concept comes into view when the indexes to all kinds of instructional materials are interfiled in one place, or at least the indexes to various media format are centrally placed, e.g., a card catalog for the printed materials, a book index for the audiovisual materials.

The fact of highly increased availability of cross-media instructional materials has also changed the form of the library quarters. The book-lined rectangular room with rows of six-seated tables has given way to new forms which make provisions for the use of new media and the new curriculum. The influence of the university library is seen here: ready reference, index and other high-traffic areas are separated from study areas; study areas include carrels for individual work, less formal and more inspiring surroundings, listening posts and viewing areas which utilize the new technology; separated stack areas; small group activities rooms; large class instruction classrooms.

Districts now provide centralized purchasing and processing agencies which release the individual building libraries (and librarians) from these chores, and by doing so cut costs of duplicated machines and supplies, permit building librarians to give full attention to the direction of use of the library materials, and insure standardized excellence in the quality of these technical processes.

Parallel professional and curriculum libraries are also maintained on a district-wide basis, as are audiovisual libraries, which serve teachers and other professional staff members on request--both with materials and consultant services.

The organizational pattern may be:

1. The building library which services all or most of the instructional materials, print and non-print, or

2. The building library which services only the print materials, the audiovisual materials being handled through an audiovisual agency within the building or a central agency serving the district, or

3. The small school's library station which maintains a reference collection and a flexible library book collection

borrowed from a district library or some other intermediate unit, with comparable services for the audiovisual materials, or

4. Any number of variations and degrees of the three major preceding patterns.

The success of any organizational pattern will depend largely upon the administration of it. A professional materials specialist with authority to direct and coordinate the library program is essential. Such a coordinator is a teacher and a librarian, a person familiar with the curriculum and curriculum problems, and one who has a knowledge of all kinds of learning resources. He enjoys administrative staff status and is actively involved in the total educational program of the schools of the districts. Whether he is responsible for one building or many, whether he is or works with the audiovisual specialist, the librarian or library supervisor assumes the leadership (or shares it with the AV specialist) in any program of learning resources selection, acquisition, organization, maintenance, and supply.

The librarian, then, functions not only as a materials specialist and administrator of the library organization, but also as a team teacher and a curriculum consultant. In these roles, he is instrumental in guiding the teaching and administrative staffs in evolving and adhering to policies relating to the selection of instructional materials. Mere quantity--or even quality--of instructional materials will not be instrumental in reflecting educational improvement. Thoughtful and scientific selection of materials designed to support and improve the schools' instructional program will result only when such policies have been cooperatively drafted by each member of the professional staff.

In 1961, the Board of Directors of the American Association of School Librarians adopted "Policies and Procedures for Selection of School Library Materials." In the section dealing with the objectives of selection, this statement makes the point that: ". . . The primary objective of a school library is to implement, enrich, and support the educational program of the school." Other objectives are concerned with: 1) the development of reading skill, literary taste, discrimination in choice of materials, and 2) instruction in the use of books and libraries.

"The school library should contribute to development of the social, intellectual and spiritual values of the students."

It is important that each member of the professional staff agree on the objectives of the instructional materials program--whether they are those recommended by the AASL or not. Without understanding and agreement of the objectives, and consequent cooperative selection of the materials and equipment, the materials acquired by the school library will go unused.

In like manner, establishing criteria for selection of instructional materials is also a cooperative process involving the total professional staff. As suggestions for such criteria, the AASL lists five:

1. Needs of the individual school
    a. Based on knowledge of the curriculum
    b. Based on requests from administrators and teachers
2. Needs of the individual student
    a. Based on knowledge of children and youth
    b. Based on requests of parents and students
3. Provision of a wide range of materials on all levels of difficulty, with a diversity of appeal and the presentation of different points of view
4. Provision of materials of high artistic quality
5. Provision of materials with superior format.

The chemistry of the school librarian's function is evident in each of these points, sometimes as a stimulant, sometimes as a catalyst. Knowledgeable in curriculum, the librarian can match curricular requirements with appropriate instructional materials. As part of the teaching team, he is alert to other teachers' and administrators' plans, interests, emphasis, strengths and weaknesses. As an educator, he has been trained in the physical and psychological growth and development patterns of young people--and is able to translate these patterns in terms of selecting appropriate instructional materials for them. Parents' involvement in the learning process can transfer to the home the school-centered activities, support and encourage them, reinforce, broaden their meaning. Parents interest in and understanding of the materials of instruction are an important means to this end. Also, parental insight into and interpretation of his children's interests and needs may be nearly as important to the selector of his reading materials as that of his teacher. The librarian is often the agent through which this information is gathered.

Because children vary in the rate, depth, and scope of learning, the single textbook approach to teaching is inadequate as a teaching tool. A major premise of the cross media instructional materials selection program, then, is that if this condition exists, instructional materials providing for differences in intellectual capacity, cultural-socio-economic environment, psychological and emotional needs, and educational preparation must be discovered. Further, they must be attention-getting and interest sustaining; they should encourage and delight as well as teach; and they should help set the standards for a personal code of values.

Selection policies will also consider specific areas of interest. Are all points of view of actually or potentially controversial subjects to be made available? To what extent? What are the policies regarding selection, acquisition, and circulation of instructional materials dealing with politics, sex, religion? What policies are effected to review, re-evaluate, and weed out materials which have become dated or can be replaced with newer materials which present a subject better? What are the policies relating to books in "series" duplicate copies, abridgments and simplified versions of classics (content), or illustrations (format)? Universal guidelines for these topics are almost impossible to draw up, because--as with an organizational pattern--the contingencies of local community more conditions, resources, local purpose, and, perhaps most importantly, local staff opinion will vary from district. But they are topics for identification, discussion, and decision.

Once the policies have been established (and hopefully endorsed by the local board of education), the framework for the selection process has been completed. It is recommended that by administrative design, Materials Selection Committees be established. Such committees should include representatives from the various grade levels, from the subject area disciplines, from the supervisory staff, and to be directed by the media specialists. While inter-disciplinary consultation is important, a more workable plan is to establish several small committees rather than fewer large ones. In the elementary grades, division is usually made between a K-3 committee and a 4-6 committee, with special area (music, physical education, reading) teachers serving on both committees. In the secondary grades, the committees are separated by team-teacher units, subject areas (Social Studies, English, etc.), or as part of the activities of curriculum study or curriculum revision committees.

The committees meet on a regular schedule and at periods during the school day established for this activity. Specific purposes should be identified for each: does the current problem involve building a basic collection for the area; for expanding the holdings of an underdeveloped or newly emphasized area; for evaluating newly available materials appropriate to the area?

If the curriculum change is involved, examination of curriculum bulletins from other schools may be surveyed for the stimulation they provide. The librarian on the committee will have the resources for locating such materials. The librarian, too, will be able to introduce and make available book and other instructional materials selection guides. These will include such basic selection tools as:

#The Elementary School Library Collection, edited by M. V. Gaver. The Bro-Dart Foundation, Newark, N. J.

#The Children's Catalog, H. W. Wilson Co., New York, N.Y.

#The secondary school and adult catalogs of the H. W. Wilson Co.

#The basic book selection guides of the American Library Association.

Other excellent sources for book and non-print selection guidelines, including those of the subject area professional associations, are listed and described in:

1. "School Library Services in the NDEA Title III program," by Helen Mahar and Ilo Remer of the Elementary and Secondary Education Branch, Office of Education, U. S. Department of Health, Education, and Welfare, Washington, D. C. 20202. (Free on request: OE-15054, Bulletin 1965, No. 25). Divided by the eight subject areas approvable for NDEA Title III aid, the booklet includes a selected list of bibliographies which themselves include book, periodical, and audiovisual aids appropriate to instruction in the elementary and secondary grades.

2. "Selecting Materials for School Libraries: Guidelines and Selection Sources to Insure Quality Collections." American Association of School Librarians. 50 E. Huron St., Chicago, Illinois 60611 (Free from the Association and from many state departments of education). This eight-page booklet is a listing of books, journals, and other bibliographies referring to quality instructional materials selection sources for all grade levels, and a variety of formats, and a wide range of subject areas. (Contributing to this publication were the following: National Education Association departments: Audiovisual Instruction, National Council for the Social Studies, National Art Education Association, Elementary-Kindergarten-Nursery Education, and American Association for Health, Physical Education and Recreation.)

A third source of selection tools, usually treating specific subjects in depth and covering a wide range of subjects, are the individual publications of the various state departments of public instruction. These selection guides are often unit-oriented and are based on successful field-tested projects or demonstrations.

When commencing such committee activities, it is often necessary for the teacher members to familiarize themselves with the existing collection. The reference collection as well as the main collection should be checked. Strengths and weaknesses in the library's holdings soon become evident to the grade and/or subject area teachers and will importantly serve to guide the committee's selection work. Titles and authors, copyright dates, tables of contents and indexes, format, size, print, illustrations, etc., and physical conditions of the materials are examined. "Why is this book (or recording or magazine or map etc.) here?" is as important as identifying gaps or imbalances in the collection.

Using the course of study as the guide, the committee seeks instructional materials which will best support the scope and sequence of topic development. The teachers know best the subject content and the students' requirements and abilities. The librarians know best the availability of and the sources for locating the materials. Together they keep in mind the goals of the course of study, the concepts to be taught. And together they arrive at a coordinated selection of materials.

Records should be kept of these committee meetings which will serve as 1) cumulated acquisitions guides indicating priorities for purchase and 2) reminders for future curriculum resource reference: which materials were acquired for what particular purposes. The North Hills (Pennsylvania) Schools use the following simple but effective "Book Selection Guide."

AUTHOR________________________TITLE________________

Publisher________________Copyright Date________________

Price__________Fiction________Non-Fiction________________

Reference____________________Grade Level________________

Evaluator___________________Recommendation________________

EVALUATION E-Excellent G-Good F-Fair P-Poor

PHYSICAL FEATURES	E	G	F	P	COMMENTS
Size: Suitability					
Binding: Quality					
Attractiveness					
Paper: Quality					
Print: Readability					
Margins: Adequate					
Illustrations: Quality					

CONTENT	E	G	F	P	COMMENTS
Style					
Literary Quality					
Organization					
Presentation					
Scope					
Pupil Appeal					
SPECIAL FEATURES					
Table of Contents					
Index					
Glossary					
Maps, Diagrams, Charts					

POTENTIAL USE

Specific curriculum tie-in____________________

Specific reader interest____________________

Filed and consulted as acquisition (or rejection) records, these profile sheets become part of the long-range acquisitions program. They may be shared with other selection committees when one title is applicable to more than one subject area. After an acquisition has been made, the records may be filed by "Curriculum tie-in" topic and used by students and teachers as suggested resources when the unit of study is taught again.

Using recommended lists of materials compiled by experts, carefully examining current reviewing media (such as Library Journal, and School Library Journal, Booklist, and the professional association periodicals), keeping alert to announcements of new materials (such as Bowker's Subject Guide to Books in Print, Paperback Books in Print, Publisher's Weekly, and The Paperback Goes to School) are all important parts of book selection process. But the actual handling of the materials, the personal examination of the potential acquisition, is by far the most satisfactory means of evaluation. It is also the least used because it is the least available.

However, there are opportunities for selection committees to see materials before they select them. For older titles, this usually entails visits to large, established library collections. Or it may be accomplished, in part, through any of the numerous varieties of inter-library loan systems, borrowing materials from large public, county, college and university, and state libraries. Publishers' representatives, too, will make calls on schools and leave examination loans of backlist materials.

New materials are more difficult to locate. However, again, there are opportunities in this area as well. There are approximately 200 book examination centers located across the country which represent a selection of pre-publication and new publication titles from a majority of the trade publishing houses. These are usually located in the central library offices of large school systems, in some public libraries, and in some state departments of education. A request addressed to the State School Library Supervisor at a state's department of public education or to the Children's Book Council, Inc. (175 Fifth Avenue, New York, N. Y. 20010) will bring identification of the center nearest to the districts. Commercial or semi-commercial traveling book exhibits are also available to school districts. These include such low cost (frequently only return postage or freight charges) opportunities as those offered by the American Library Association-Children's Book Council program usually managed by each state's State Library; the Combined Books Exhibit and the Combined Paperback Books Exhibit (950 University Ave., New York 52, N. Y.) and the Books on Exhibit, Inc. program (North Bedford Road, Mt. Kisco, N. Y. 10549).

Other opportunities for visiting large collections of quality materials will undoubtedly be established as states develop their programs under Title II of the Elementary and Secondary Education Act of 1965.

Rapid building of a superior instructional materials collection is virtually impossible. Even if a district were to provide all the necessary funds, personnel, and quarters instantly and in sufficient quantity to make possible supposedly maximum benefit programs, such a practice would be discouraged. It is necessary to follow the cooperative selection procedure outlined above if 1) the most appropriate materials are to be located, and 2) there is to be teacher-identification with the materials after they have been acquired. Only when teachers have participated in the selection of materials, and only when librarians have participated in the selection of materials, and only when librarians have participated in the curriculum conferences--only then can there be the basis for skilled pairing of specific material to specific curricular need. This takes time.

In-service teacher training in the use of materials is a component of the selection program. It is axiomatic to state that the degree of value of materials selected is only as great as the use made of them, and perhaps it is also axiomatic to note that many teachers are unfamiliar with or reluctant to use a variety of cross-media learning resources. At any rate, the vitality and usefulness of the instructional materials supply is often drastically curtailed in its effectiveness because classroom teachers do not know how to use it. This is further reflected in the selection of the materials themselves. Without identified purpose for selection nor predetermined use of the selected, the clean line of

#identification of a teaching plan

#identification of policies for selection of supporting instructional materials

#identification of instructional materials

#acquisition, organization, and accessibility of instructional materials,

without the teacher's knowledge of and use of these factors, the clean line of purpose is fractured. The answer to the question of how to involve them is not in whole (nor unfortunately, too frequently, even in part) in pre-service training. It falls, then, to the local district to provide the opportunity for professional growth--and enthusiasm and ease and creativity in the use of these materials.

In the in-service programs, the teacher meets the library. Or more precisely, the teacher meets the library's resources. There is no standard format for these programs. They range from two or three "faculty meeting" sessions to six-month or two-year plans. But the best of them have these ingredients; a zest in approach; an immediacy of a sense of need for the content; practicality of purpose; immediacy of use; personal enlightenment and enjoyment; concrete suggestions for implementation.

These programs may include presentations and follow-up discussions of such topics as:

#Books of Information--Science

#Books of Information--Biography

#Teaching with Sound

#Integrating Filmstrips in the Lesson Plan

#Childrens' Book Editing

#American & European Folklore Compared

#Using Sports Fiction in Human Relations

#How a Book is Made

#Science Fiction and Science--and History

#Bibliotherapy

#Comparative Study of Science Magazines

Whenever possible, outside authorities are brought in to make the presentation, excite the interest and the questions, conduct the demonstrations, and stimulate the follow-up activities. Surprisingly, such resource persons are not difficult to find, particularly if the librarian has maintained an up-to-date file on such resource people as part of the multi-media instructional materials program. Such a file will include information on what subjects the resource person is competent in, his fee (if any), the strengths and weaknesses in his presentation, his personal requirements: size of audience, technical requirements (blackboard, microphone, overhead transparency projector), biased point of view, etc. He will extend and integrate information; he will introduce; he will plant basic how-to techniques; and he will, hopefully, encourage to explore. The role of the administrator as initiator, stimulus, and bridge between production and procedure cannot be over-estimated. This is one activity--or series of activities--where a sustained administrative leadership role is essential.

The value of the pilot study approach to testing, evaluating, and selecting library resources is a comparatively recent innovation. Such a study can be conducted at either the elementary or secondary levels. It requires more time, more materials, more financial support. But it will return scientific corroboration for the selection of materials more precise than by any other method.

The procedure usually is to select a unit of study for which there is little or no textbook instructional support. For example, such a unit might be concerned with enriching the basic reader for a third grade class or developing a study of an emerging African nation for a seventh grade group. The librarian and teacher, working together, develop a course of study considering the goals of learning experience, the concepts expected to be taught, the individual pupil needs, abilities, and interests as well as those of the class as a whole. Media programming is also cooperatively undertaken: survey and evaluation of present instructional materials collection; identification of limitations of the collection; selection of materials to correct the limitations. Sequential reading (and viewing and listening) is planned with attention given to providing a wide range of instructional materials--wide in content, level of difficulty, and in format.

Teaching skills in the use of materials (location, evaluation, application) should be one of the goals of this unit.

Associative learning, then, also takes place.

Essential to the success of such a project is the accessibility of materials to the class and opportunity for individual investigation. Flexible "scheduling" of the library and/or the library's resources is requisite. The library, as well as the classroom, becomes a learning laboratory.

Such a project will hopefully answer questions of this kind:

#Which materials and combinations of materials were most effective--and why?

#What were the implications of timeliness in the sequence of presentation of the materials?

#What were the successful patterns of coordinating the timeliness of the media with the appropriateness to the subject?

The answers to these questions and a great many others evolving from the project will be of significance to identifying future guidelines and techniques in the instructional materials selection processes.

It can be recognized, then, that there is a necessity for each district to develop a philosophy and procedural plan for library participation in the educational program--as well as a curriculum study and design. The educational potential of the library functioning as a learning laboratory is limited only by the cooperative skills and imagination of the entire professional staff. New opportunities of increased funds for the acquisition of instructional materials are available through the expanded Title III of the National Defense Education Act and through Titles I, II, and III of the Elementary and Secondary Education Act of 1965. Teachers, administrators, and librarians should familiarize themselves with the provisions of this federal aid as it is applicable in their states. They should stimulate pilot studies, demonstration projects, and experimental programs in the selection and uses of instructional materials. And through these activities, they can expect to formulate consolidated programs of useful, quality media collections which parallel, support, and extend the teaching-learning situations of the school.

APPENDIX D

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SURVEYS IN THE NATIONAL PLANNING

OF

CURRICULUM AND INSTRUCTION:

A DESIGN FOR RESEARCH

APPENDIX E

RESEARCH DESIGN

National Education Association
Center for the Study of Instruction
April, 1966

STUDIES IN THE RATIONAL PLANNING

OF

CURRICULUM AND INSTRUCTION:

A DESIGN FOR RESEARCH

National Education Association
Center for the Study of Instruction
April, 1966

A. Objectives

Every third year the Review of Educational Research is devoted to the literature on curriculum planning and development. In June 1960, the lead chapter entitled "The State of the Field" concluded as follows:

> Curriculum theorizing to date is best described as abstract speculation; curriculum research as "dust bowl" empiricism; and curriculum practice as rule-of-thumb guesswork (often a wet thumb, at that, held aloft to test the direction of the prevailing breeze).[1]

This description still holds in 1966.

1. Statement of the Problem

Activity in the curriculum field has mushroomed in the last decade. Its products are revolutionary in intent. During this period, however, progress has been minimal in the development, field testing, and evaluation of comprehensive conceptual systems of curriculum and instruction. Rather, the main thrusts of the curriculum reform movement have concentrated upon: (1) improving the quality of curriculum offerings in separate academic disciplines; (2) developing and promoting new instructional media like educational television, language laboratories, computers, and programed materials; and (3) tryouts of and publicity for new school organizational patterns like team teaching and non-graded schools. In all three of these movements, curriculum specialists and researchers--both theorists and practitioners--have been conspicuously lacking. With the exception of a small group, the great mass of public school teachers and administrators and faculties in schools of education has been uninvolved.

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[1] John I. Goodlad, "Curriculum: The State of the Field," Review of Educational Research, XXX, No. 3 (June, 1960), pp. 195-96.

Some local schools, however, have been affected by these movements. The most energetic systems have been the most sensitive to internal and external pressures for upgrading their programs--pressures coming from all sides. Such schools face choices, for example, among an increasing variety of excellent new curriculum guides and materials, at all levels and in all subjects. The national science and mathematics curriculum projects were the first bombardment. Now, it is difficult to keep up with these and other materials that are finding their way into the marketplace. Over forty national projects exist in the social studies alone,[1] and the humanities are not far behind.

At the same time, massive new federal programs presuppose that the quality of the educational system is a national as well as a local concern and investment. This quality must include more attention to the curriculum and instruction of the children of the poor and deprived, and to the non-academically-oriented student. Thus such federal programs as Head Start, the Job Corps, and the projects growing out of Title I of the Elementary and Secondary Education Act of 1965 (Public Law 89-10) not only assume failures on the part of local communities, homes, and schools, but also point to a virtual vacuum in the curriculum reform movement of the last ten years. These programs, by their very being, are critical of the status quo; nevertheless, they depend upon the local school systems to assume a large share of their planning and management.

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[1] See Social Education, XXIX, No. 4 (April, 1965); and XXIX, No. 7 (November, 1965).

Another group of new forces and faces also impinges upon the schools. These may be categorized under the rubric "bureaucracy, technology, and industry." Manifestations in our society of cybernetics, automation, mass communication, and megalopolis tend to frighten both the general public and the teaching profession. There is a very small and highly sophisticated group of researchers, planners, developers, and engineers who are attempting to shape and cope with these new forces. Such is the gap in communication between this group and the general public that even the early fallout of their work, such as data processing techniques and systems research, is Sanskrit to the majority. We are only now beginning to see adaptations of relatively simple techniques and equipment for educational purposes. It is clear, however, that the impact of new research will increase rather than diminish the pressures and the choices before the professional workers in education.

All of these new curricula, new tools and processes, and new federal programs, seen against the background of technological and bureaucratic complexities, pose obvious problems for the schools. Out of the last decade's events grow the next decade's demands, not the least of which is a substantial reduction in the gap which exists between all of the activity described above and classroom practice throughout the nation.

Bridging the gap between innovation and practice in the schools, however, is a difficult and complicated task. Its elements involve not only the dynamics of institutional change--which means changing many individuals--but also the creation of some reasonable order out of diverse curricular elements. These components cannot be dealt with other than through the thousands of autonomous local school systems.

Undoubtedly, the three-headed hydra within the teaching profession--

"tradition, lethargy, and doctrine"[1]--keeps the discrepancy between desirable change and practice a wide one. These facets of the problem prevent the use of the knowledge that does exist about the growth and change of individuals and institutions. Admittedly some of the theories about engineering change are in their infancy. But many of the aims of the "Great Society" depend upon the very teachers and administrators who must change themselves in order to change others.

There is no question but that the national network of regional educational laboratories, almost ready to begin operations, will attack the problem of bringing new knowledge and research to the classroom. This set of new institutions plans not only to organize the educational resources of the nation by regions, but also to engage in a wide variety of programs including basic and applied research, curriculum development and evaluation, dissemination, and teacher education. The projected activities for these laboratories hold promise for upgrading the quality of school programs. Their planning, however, notably lacks the theoretical bases upon which to build and organize their many and important activities.

To date, no group--in or out of the educational establishment--has been willing to face the complexity of an attack on the total problem of institutional change and comprehensive curriculum development. With some few exceptions, the target for individual change has been the teachers or the administrators, seldom the school board, and never the total hierarchy. No national or regional group is giving concentrated attention to the problem at the operational level of: (1) selecting and combining subjects into some kinds of reasonable, overall curriculum models that will accommodate all learners; (2) incorporating into a total program both logical and psychological sequence as the student moves from the beginning to the end of the educational continuum; and (3) relating curriculum change to teaching strategies, school organization, and the administration and management of a school system. Instead, the last decade has been characterized by a rather desperate and piecemeal tinkering with one or another of the above elements.

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[1] Center for Coordinated Education, University of California at Santa Barbara, "Institutionalizing Change," A position paper presented at the Ford Foundation School Improvement Workshop, Fort Lauderdale, Florida, January, 1966. (Unpublished).

The piecemeal response of local school systems to their huge responsibilities is hardly surprising. Accumulated practice has not provided manageable approaches for the development of local criteria which should give direction to the rapid changes that are now required of schools. There has seldom been time or money to allow educators to step to one side and look at the whole. Now federal money promises to eliminate at least the latter gap. Whether or not these funds will provide long-term solutions revolves around the touchy question of federal encroachment upon local prerogatives. That issue can be resolved only as the present uneasy partnership between the local schools and the states, on the one hand, and the federal government, on the other, learn to practice the kind of creative federalism described by President Johnson last February.[1]

To summarize, this program suggests that Phase One of the curriculum reform movement is over. It urges that Phase Two attack the problems exposed by the work done in Phase One. Thus, Phase Two must insist on pedagogical scholarship comparable to the academic scholarship of Phase One--without losing the latter. In Phase Two, a theoretical framework must precede everything else. Curriculum and instruction must be viewed as a whole rather than as bits and pieces. Up-to-date curricula must be designed that make no compromise with truth or significance and yet prove attractive and comprehensible to dull or poorly motivated children as well as to bright youngsters. Finally, Phase Two must bury the specter of federal control, and build in its place the diversity of excellence which can emerge from a creative partnership among local communities, states, and the federal government.[1]

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[1] Speech by President Lyndon Johnson at the Annual Convention of the American Association of School Administrators, Atlantic City, New Jersey, February 16, 1966.

2. Major Goals and Specific Objectives

The NEA Center for the Study of Instruction (CSI) is under no delusions about its ability to fill in all of the gaps that have been identified in the foregoing pages. Nevertheless, as a first step in what no doubt will be a journey of a thousand miles, CSI can bring together some of the necessary ingredients for the systematic examination of these problems in all of their complexity. Therefore, our major goal is to develop settings in which the rational planning of curriculum and instruction can be studied in operation and through which a nucleus of catalytic agents may be identified and nurtured. This presumes the creation of a new kind of educational consortium.

The educational consortium here envisioned consists of CSI, its network of consultants, the human and material resources of the National Education Association and its thirty-three departments, four school systems whose discrete problems and programs represent those most often encountered throughout the country, and a group of observers from schools in settings similar to the testing sites. We believe that the interchange among the institutions and groups making up the consortium will strengthen the capacity of local schools to initiate and manage curricular change themselves and, at the same time, will focus the attention of a variety of theorists, researchers, and national groups upon the full gamut of problems faced by local institutions. We further believe that the problems here posed will require people who can both see the problem as a whole and who can work substantially on selected parts.

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[1] *Ibid*.

More specifically, the objectives of this proposed educational consortium are:

a. to draw upon the conceptual models of selected academic and pedagogical scholars in the field of curriculum and instruction;

b. to screen these for their relevance and feasibility in given local situations;

c. to incorporate appropriate models into various comprehensive designs for improving curriculum and instruction in different school settings;

d. to develop instruments and research designs to observe, evaluate, and modify the models in operation;

e. to translate these comprehensive designs into practice and test them;

f. to provide the means through which this experience may be disseminated to non-participating schools and school systems.

Within the linked system described above, each of the participating organizations and groups can effectively address itself to certain of the objectives enumerated above. These objectives are intimately related to the activities proposed for each group and will be treated more specifically in the "Description of Activities."

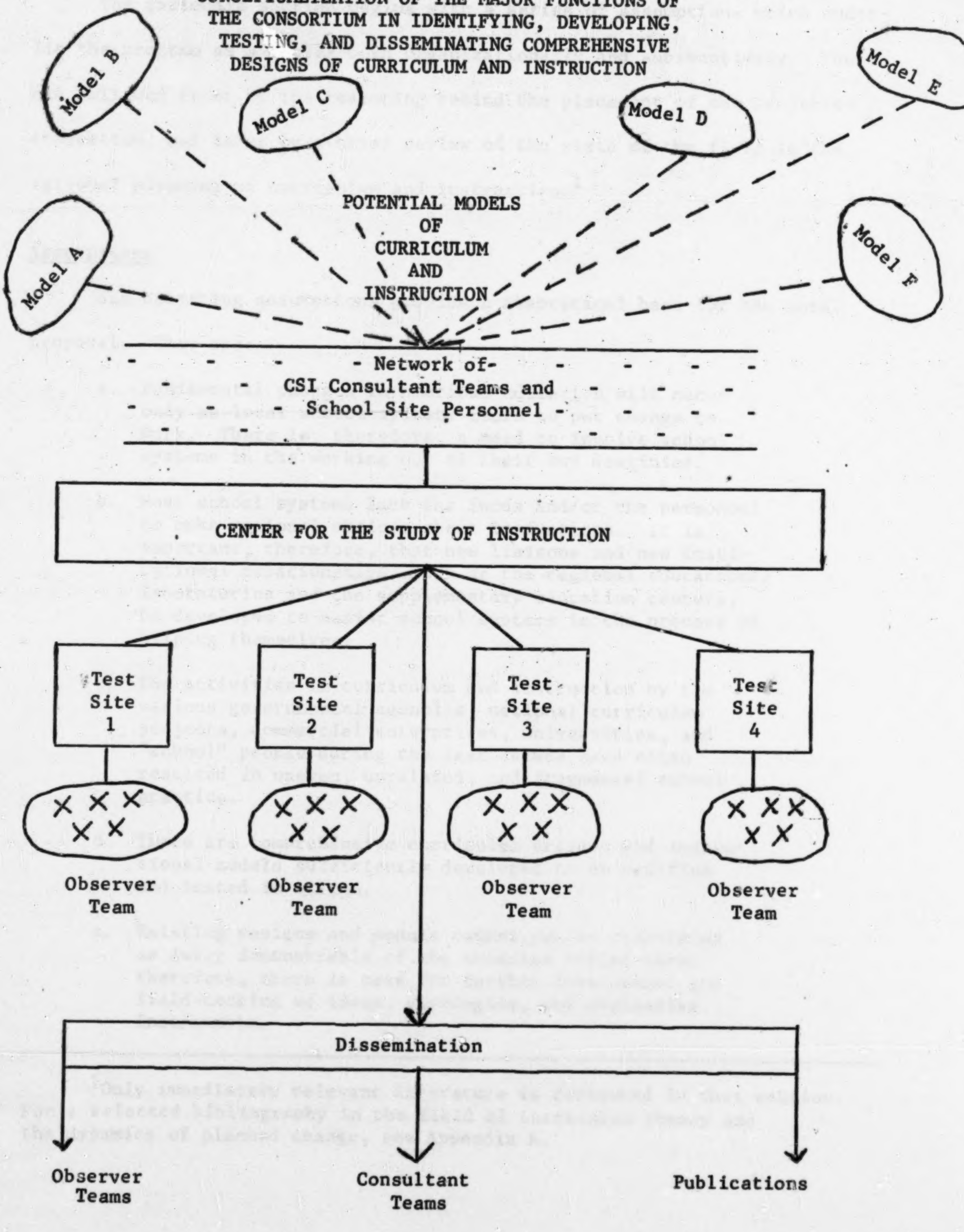
These are difficult and long-term goals and objectives. CSI is fully aware of their complexity and knows that the task suggested here is an eight to ten-year program--not a three-year one. In short, the three-year program here outlined can get the study well underway but far from completed.

Exhibit I which follows introduces the reader to a first conceptualization of the structure and functions of the proposed consortium. Detail concerning organization, function, and program may be found in the activities section. The reader will note that the potential models of curriculum and instruction appear as clouds at the top of the diagram. Each contains a reasonably well-developed theoretical construct relating to curriculum development or teaching strategy. For example, the names of B. O. Smith, Ralph Tyler, Hilda Taba, and Elizabeth Maccia suggest potential curriculum models, while Ned Flanders, Philip Jackson, and Jerome Bruner suggest instructional and teaching models.

Just above CSI itself is a moving screen or filter made up of the CSI network of consultant teams and school site personnel. Next comes the small coordinating and communication office housedat CSI and linked with the four pilot test sites. This linked system is the heart of the enterprise. Following down the page, the pilot sites, in turn, are observed systematically by selected persons from school districts with similar problems. These observers will function as catalytic agents in their home systems. Finally, a three-pronged dissemination network--consisting of the observer teams, the CSI consultant teams, and a series of publications--spreads to the profession the products and processes emanating from the whole consortium and any of its parts.

EXHIBIT I

CONCEPTUALIZATION OF THE MAJOR FUNCTIONS OF THE CONSORTIUM IN IDENTIFYING, DEVELOPING, TESTING, AND DISSEMINATING COMPREHENSIVE DESIGNS OF CURRICULUM AND INSTRUCTION


Model B
Model C
Model D
Model E
Model A
Model F
POTENTIAL MODELS OF CURRICULUM AND INSTRUCTION
Network of CSI Consultant Teams and School Site Personnel
CENTER FOR THE STUDY OF INSTRUCTION
Test Site 1
Test Site 2
Test Site 3
Test Site 4
Observer Team
Observer Team
Observer Team
Observer Team
Dissemination
Observer Teams
Consultant Teams
Publications

3. Rationale

The rationale section begins with a series of assumptions which underlie the program as a whole--both organizationally and substantively. These are followed first by the reasoning behind the placement of the projected consortium, and later by a brief review of the state of the field in the rational planning of curriculum and instruction.[1]

Assumptions

Six operating assumptions provide a theoretical base for the total proposal. They are:

a. Fundamental changes in American education will occur only as local school systems learn to put change to work. There is, therefore, a need to involve school systems in the working out of their own destinies.

b. Most school systems lack the funds and/or the personnel to make rational choices about innovations. It is important, therefore, that new liaisons and new institutional relationships, such as the regional educational laboratories and the supplementary education centers, be developed to assist school systems in the process of helping themselves.

c. The activities in curriculum and instruction by the various governmental agencies, national curriculum projects, commercial enterprises, universities, and "school" people during the last decade have often resulted in uneven, unrelated, and fragmented school practice.

d. There are comprehensive curriculum designs and instructional models sufficiently developed to be modified and tested in action.

e. Existing designs and models cannot yet be classified as fully demonstrable of the theories behind them; therefore, there is need for further development and field-testing of ideas, strategies, and evaluative instruments.

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[1] Only immediately relevant literature is footnoted in this section. For a selected bibliography in the field of curriculum theory and the dynamics of planned change, see Appendix A.

f. It is possible to illuminate and illustrate the process of rational development of curriculum and instruction for others by demonstrating the full complexity of the major components in action and thereby to narrow the existing gap between theory and practice.

Placement of the Consortium

CSI is a logical site for housing the coordinating body of the consortium. While a comparatively new organization, it already has delineated and initiated action in several critical areas of study in curriculum and instruction in its Project on Instruction materials.[1] The Project made thirty-three specific recommendations in answer to twelve crucial issues in education. The major areas and questions asked were:

a. DECISION MAKING

Who should make what decisions about education?

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[1] Project on the Instructional Program of the Public Schools, Schools for the Sixties, A Report of the Project on Instruction (New York: McGraw-Hill Book Co., 1963).

________, Deciding What To Teach (Washington: National Education Association, 1963).

________, Education in a Changing Society (Washington: National Education Association, 1963).

________, Planning and Organizing for Teaching (Washington: National Education Association, 1963).

________, The Principals Look at the Schools: A Status Study of Selected Instructional Practices (Washington: National Education Association, 1962).

________, The Scholars Look at the Schools: A Report of the Disciplines Seminar (Washington: National Education Association, 1962).

Center for the Study of Instruction, From Bookshelves to Action: A Guide to Using the Recommendations of the NEA Project on Instruction (Washington: National Education Association, 1964).

Dorothy M. Fraser, Current Curriculum Studies in Academic Subjects: A Working Paper Prepared for the Project on the Instructional Program of the Public Schools (Washington: National Education Association, 1962).

Filmstrips

Center for the Study of Instruction, Deciding What To Teach (Washington: National Education Association, 1964).

________, Planning and Organizing for Teaching (Washington: National Education Association, 1964).

b. **RESEARCH, EXPERIMENTATION, INNOVATION**

How can an extensive program of educational research, experimentation, and innovation be developed?

c. **EDUCATING ALL CHILDREN AND YOUTH**

How can the instructional program of the school be designed to develop the individual potentialities of all members of the school population within the framework of a society that values both unity and diversity?

d. **ESTABLISHING PRIORITIES FOR THE SCHOOL**

What are the distinctive responsibilities of the school in contrast to those that properly belong to the family, the church, industry, and various youth-serving agencies?

What responsibilities should the school share with other institutions and agencies?

What, then, should be included in the school program? What should be excluded from it?

e. **DEALING WITH NATIONAL PROBLEMS RELATED TO YOUTH**

What is the school's role in dealing with serious national problems such as youth unemployment and juvenile delinquency?

f. **TEACHING ABOUT CONTROVERSIAL ISSUES**

What is the school's role in teaching about controversial issues and about communism and other ideologies?

g. **A BALANCED PROGRAM**

How can the school provide a balanced program for the individual and maintain it amidst various pressures for specialization?

h. **SELECTING CONTENT**

How can schools make wise selections of content from the ever-growing body of available knowledge?

i. **ORGANIZING CONTENT**

How should the content of the curriculum be organized?

j. **ORGANIZING THE CURRICULUM**

How should the curriculum be organized to give appropriate direction to the instructional process?

k. ORGANIZING THE SCHOOL AND THE CLASSROOM

How should the school and the classroom be organized to make the most effective use of the time and talents of students and teachers?

l. MATERIALS, TECHNOLOGY, SPACE

How can the quality of instructional materials be improved?

How can the products of modern technology be used effectively?

How can space be designed and used to support the instructional program?

CSI has already demonstrated the capacity to bring together outstanding scholars and school practitioners to seek solutions to these vital issues. It has created an environment where scholars and school people have focused upon common problems without regard for academic status, institutional allegiances, and political conflicts of interest.

CSI has been able to attract the attention and respect of academic scholars; consequently, it has become a kind of bridge between educationists and academic scholars and between researchers and practitioners. It has managed to gain the support of the activists while maintaining the respect of the establishment.

To insure a thorough system of communication, CSI has organized sixty prominent scholars and educators into seven regional teams that serve to generate new areas of research and work with schools and school systems upon request. (See Appendix F for Roster of Members)

Since CSI is a part of the NEA, it can use the elaborate channels of communication that already exist. It has direct access to schools and school systems without being hampered by the specters of control and political conflict of interest.

The State of the Field

A discussion of the state of the field must begin with a definition of terms. A "conceptual system" identifies "the major questions to be answered in developing a curriculum . . . , the elements that tie these questions together in a system . . . , subordinate questions . . . , [and] sources of data to be used . . . in answering the questions posed by the system . . ."[1]

In this document, the terms "comprehensive conceptual schemes" and "comprehensive designs" are also used to describe conceptual systems. They differ from the terms "models" and "theoretical constructs" in that comprehensive schemes, designs, or systems will, according to this operational definition, integrate several models or constructs. Such global designs are what is meant by the phrase "the rational planning of curriculum and instruction" as it appears throughout this document.

A central thesis of this proposal is that the rational planning of curriculum and instruction must deal with interlocking major components, rather than single components considered in isolation. Some persons have termed the present age the megaton-megalopolis era. This polarizes in a way the difference between *1984* and *Brave New World Revisited*; however, both cry out for a consideration of ends and means, for an intensive and analytical study of what is being called synergy--the cooperative interaction of the various elements of a system. Schools are complex organizations with innumerable parts that are designed to accomplish the ends of a society and ought to be synergies.

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[1] Goodlad, *op.cit.*

Toynbee suggests that:

> . . . every historic-culture pattern is an organic whole in which all the parts are interdependent, so that, if any part is prised out of its setting, both the isolated part and the mutilated whole behave differently from their behavior when the pattern is intact.[1]

If we substitute the word "school system" for "historic-culture pattern," we have a plausible explanation for the failure of many curricular innovations to take hold outside of the place where they were invented. This substitution also gives us a working hypothesis for studies in rational planning of curriculum and instruction. This hypothesis is that it is important to study rational planning in an entire school system. Thus, studies of a school, or a type of classroom organization, or a subject, while often necessary as a matter of feasibility and management, need to fit into a larger design which encompasses the whole system. It is, we suggest, a much more laborious task than has been generally undertaken. Most attempts to date have been superficial. The results, predictable, have been equally superficial. As Sizer suggests:

> Virtually all of the curriculum reformers . . . have assumed that their subjects will be taught for a certain number of hours per week in classes of a certain size; . . . . Good though they be, if the new curricula come subject by subject into the schools, fragmentation of the curriculum as a whole remains. Thus the movement forward is hindered by the limited objectives of the particular subjects involved.[2]

This program plans to build upon the work of persons who have viewed education as a total system and to fit together elements that are lacking. One example of such an approach in curriculum design will be considered in some detail for the express purpose of showing the types of questions that must be identified and answered. The rationale to be considered will include the work of Tyler, Goodlad, Sand, and Bloom. They have been identified with the development of a rationale which allows for the examination of many components and their relationships to each other.

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[1] Arnold Toynbee, The World and the West (London: Oxford University Press, 1963), pp. 74-75.

[2] Theodore R. Sizer, "Classroom Revolution: Reform Movement or Panacea?," Saturday Review, June 19, 1965, pp. 52-53.

Tyler asked four questions:

a. What educational purposes should the school seek to attain?

b. What educational experiences can be provided that are likely to attain these purposes?

c. How can these educational experiences be effectively organized?

d. How can we determine whether these purposes are being attained?[1]

Goodlad, in collaboration with the NEA Project on Instruction, elaborated on Tyler's ideas by adding several new dimensions. Recognizing that schools and school systems are complex organizations, he calls for more clarity and precision regarding who should make what curriculum decisions. He suggests three levels of operation, and states his case as follows:

> The problems of planning and organizing for teaching are classified here at three levels of remoteness from students engaged in their schooling. Close to these students, teachers make daily instructional decisions; at a more remote level, teachers and administrators make institutional decisions; and at a still more remote level, school board members, state legislators, and federal officials make societal educational decisions.[2]

Goodlad assumes that each level of the organizational structure is concerned with answers to all four of the basic questions posed by Tyler. Answers should differ, however, on a generality-specificity continuum. The societal level answers all four questions in a global and directional fashion. These answers become the goals of a school system. The institutional level translates society's goals into specific pedagogical behavioral objectives which give direction to classroom teachers. The instructional level includes the decisions that teachers make about what and how to teach.

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[1] Ralph W. Tyler, Basic Principles of Curriculum and Instruction (Chicago: The University of Chicago Press, 1950).

[2] Project on the Instructional Program of the Public Schools, Planning and Organizing for Teaching (Washington; National Education Association, 1963), pp. 20-21.

This conceptual scheme also is indebted both to the Bloom and Krathwohl taxonomies of educational objectives in the cognitive and affective domains.[1] With these taxonomies as a base, this rationale insists that institutional objectives be built both upon an analysis of the scholarly disciplines and upon a precise definition of the behavior desired of the learner. These behavioral objectives limit the possible choice of content, teaching strategies, and pattern of organization, but they do not make concrete prescriptions. The creative and imaginative teacher, thus, has a wide range of possible curriculum decisions. At the same time, he is given a realistic direction consistent with the stated beliefs of the community being served by the school system.

Transactional agents, generally superintendents of schools and principals, provide a liaison between the three levels. They serve to translate objectives, to provide needed resources, and to assist as procedural agents. This is an area where curriculum reform has frequently encountered difficulty; that is, transactional agents have been unable to initiate a strategy for change capable of implementing the desired curriculum. During the last five years, however, research in the behavioral sciences has begun to be translated into language that is more useful to practitioners.[1]

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[1] Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook I: Cognitive Domain (New York: David McKay Co., Inc., 1956).

David R. Krathwohl and others, Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook II: Affective Domain (New York: David McKay Co., Inc., 1964).

Of note is the fact that the previous discussion has dealt only indirectly with the components that affect the teacher--e.g., teaching styles, instructional materials, and learning. Any of these categories brings to mind theories and studies of learning and teaching--the language of the classroom, Bellack;[2] patterns of communication in the classroom, Jackson;[3] teaching strategies, Smith[4] and Joyce;[5] cognitive skills in children, Taba;[6] cognitive process in learning, Bruner;[1] teacher-pupil interaction analysis, Flanders;[2] role behavior-class activity, Perkins.[3]

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[1] Warren G. Bennis (ed.) and others, The Planning of Change: Readings in the Applied Behavioral Sciences (New York: Holt, Rinehart and Winston, 1961).

Matthew B. Miles and others, Innovation in Education (New York: Bureau of Publications, Teachers College, Columbia University, 1964).

Richard O. Carlson, Adoption of Education Innovations (Eugene, Oregon: The Center for the Advanced Study of Educational Administration, University of Oregon, 1965).

Keith Goldhammer and Frank Farner, The Jackson County Story (Eugene, Oregon: The Center for the Advanced Study of Educational Administration, University of Oregon, 1964).

Egon G. Guba and Shirley Lipson (eds.), Theory Into Practice (Columbus, Ohio: Bureau of Educational Research and Service, The Ohio State University, 1963).

Everett M. Rogers and George M. Beal, "The Importance of Personal Influence in the Adoption of Technological Changes," Social Forces, XXXVI (May, 1958), pp. 329-35.

[2] Arno A. Bellack and J. R. Davitz, in collaboration with H. M. Kliebard and R. T. Hyman, The Language of the Classroom: Meanings Communicated in High School Teaching, Teachers College, Columbia University (U. S. Office of Education Cooperative Research Project No. 1497, 1963).

[3] Philip W. Jackson, "Teacher-pupil Communication in the Elementary Classroom: An Observational Study," Paper read at the Annual Convention of the American Educational Research Association, Chicago, February, 1965.

[4] B. Othanel Smith, M. Meux, J. Coombs, and G. Nuthall, A Tentative Report on the Strategies of Teaching, University of Illinois (U. S. Office of Education Cooperative Research Project No. 397, 1960).

[5] Bruce Joyce, Strategies for Elementary Social Science Education (Chicago: Science Research Associates, 1965).

[6] Hilda Taba, S. Levine, and F. F. Elzey, Thinking in Elementary School Children, San Francisco State College (U. S. Office of Education Cooperative Research Project No. 1574, 1964).

On the other hand, the instructional level of decision-making in this design is fluid and open. It can embrace many of the important constructs and paradigms listed above. They are not mutually exclusive.

Exhibit II is a sample of a comprehensive conceptual scheme that incorporates many of the ideas just discussed. It is, however, only one of several possible designs or systems approaches and only one of the several which this program plans to develop and test.

Thus, CSI reaffirms its belief in a diversity of means, but holds staunchly to the notion that lasting change in the school is dependent upon the development of global theories which can be tested and replicated in action.

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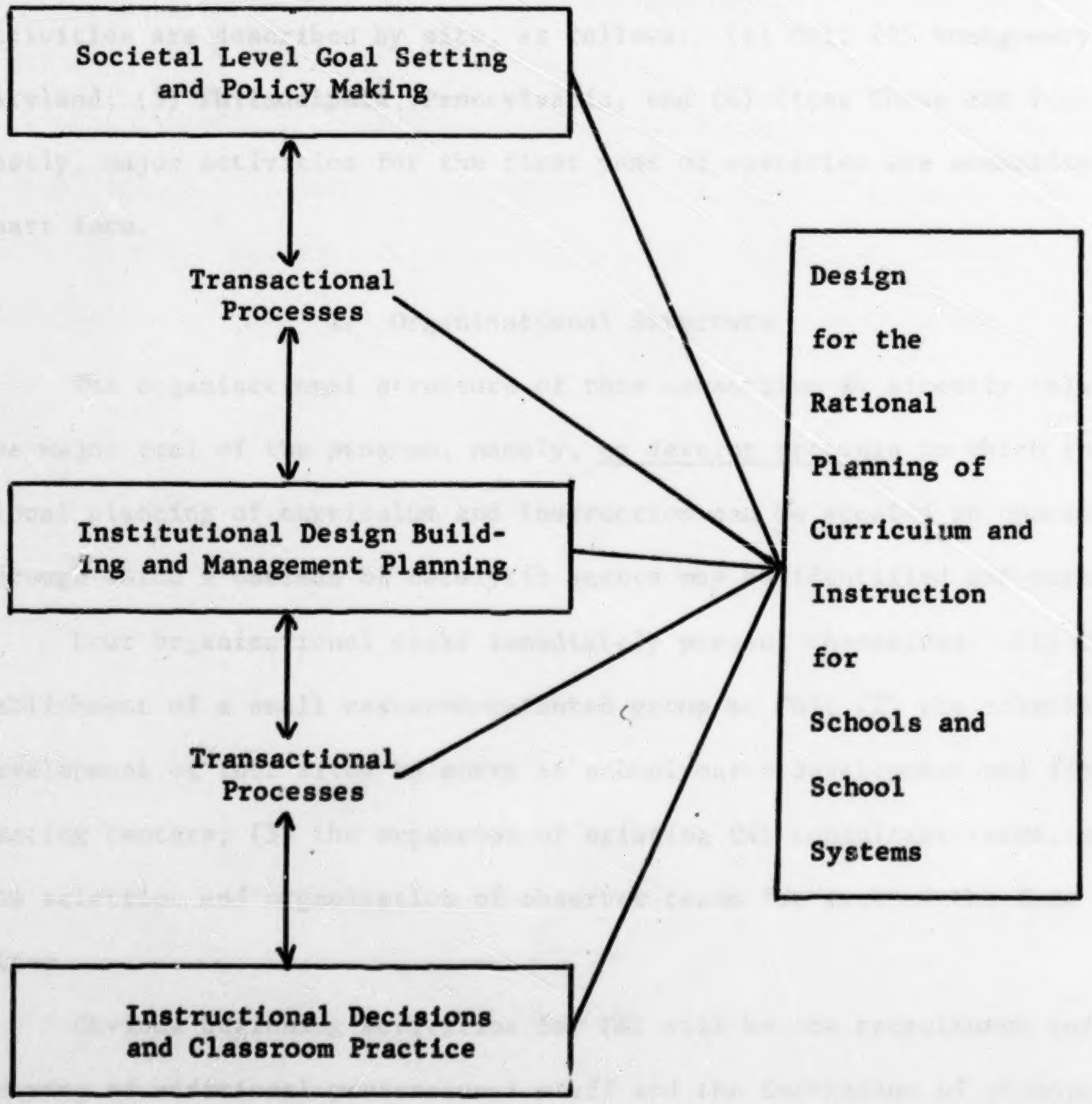
[1] Jerome S. Bruner, Toward a Theory of Instruction (Cambridge, Mass.: Harvard University Press, 1966).

[2] Ned A. Flanders, Teacher Influence, Pupil Attitudes, and Achievement, University of Minnesota (U. S. Office of Education Cooperative Research Project No. 397, 1960).

[3] H. V. Perkins, "A Procedure for Assessing the Classroom Behavior of Students and Teachers," American Educational Research Journal, I, No. 4 (1964), pp. 249-60.

EXHIBIT II

A COMPREHENSIVE CONCEPTUAL SCHEME


Societal Level Goal Setting and Policy Making
Transactional Processes
Institutional Design Building and Management Planning
Transactional Processes
Instructional Decisions and Classroom Practice
Design for the Rational Planning of Curriculum and Instruction for Schools and School Systems

B. Description of Activities

This section of the plan discusses first the organizational structure of the consortium and accompanying managerial activities and roles. Next, it considers general program activities to be shared by all members of the consortium and their relationships. Then, projected specific program activities are described by site, as follows: (1) CSI; (2) Montgomery County, Maryland; (3) Philadelphia, Pennsylvania; and (4) Sites Three and Four. Lastly, major activities for the first year of operation are summarized in chart form.

1. Organizational Structure

The organizational structure of this consortium is directly related to the major goal of the program, namely, to develop settings in which the rational planning of curriculum and instruction can be studied in operation and through which a nucleus of catalytic agents may be identified and nurtured.

Four organizational tasks immediately present themselves: (1) the establishment of a small research-oriented group at CSI; (2) the selection and development of four sites to serve as school-based development and field-testing centers; (3) the expansion of existing CSI consultant teams; and (4) the selection and organization of observer teams for each of the four school sites.

Obvious beginning activities for CSI will be the recruitment and housing of additional professional staff and the initiation of planning activities with school site personnel. CSI has already made initial selection of and contact with the first two sites, Montgomery County, Maryland, and Philadelphia, Pennsylvania. These sites were chosen for the first year because they represent different stages of development as well as different problems and school populations.[1] Additional sites will be introduced on the same basis and in a staggered fashion. This scheduling will allow the transfer of applicable experience, observation and evaluation techniques, and other objective data on successes and/or failures in change strategies. CSI staff plans to select sites three and four during 1966-67, but not to organize programs there until 1967-68.

CSI also expects to increase the national coverage of its consultant teams by adding five new teams to its present seven and by reorganizing the whole. Appendix F shows existing and projected consultant teams and the geographic areas they will serve. The CSI staff has the responsibility for recruiting and organizing these teams as well as the small observer teams who will be regular visitors at each site.

In addition, the CSI staff assigned to this program will be responsible for: (1) renewal and initiation of contacts with scholars and researchers; (2) coordination of communication activities among participating agencies; (3) organization of joint conferences and seminars; and (4) coordination of research and dissemination activities.

Although CSI expects to assume responsibility for the central coordination and communication activities for the consortium, major policy decisions affecting the consortium as a whole will be considered by a representative executive council. Initially, this group will consist of eight members, with a maximum of ten members: two representatives from CSI, one representative from each school site, one representative from the CSI consultant teams, one representative from the observer group, and two members-at-large. At the beginning and end of each school year, the council will meet to review program developments and to consider and make recommendations on such basic changes and controversial issues as may arise during the life of the program.

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[1] See Appendix G for profiles of these two sites.

The school members of this consortium will obviously preserve their own administrative autonomy. By joining the consortium, however, each will need to build into its organizational structure a number of additional services and responsibilities. Membership will require staff to coordinate on-site research and planning activities; to serve as liaison with CSI and other members of the consortium; to organize site meetings with consultants and observer teams; and to prepare financial and progress reports. These administrative duties will be common to all sites.

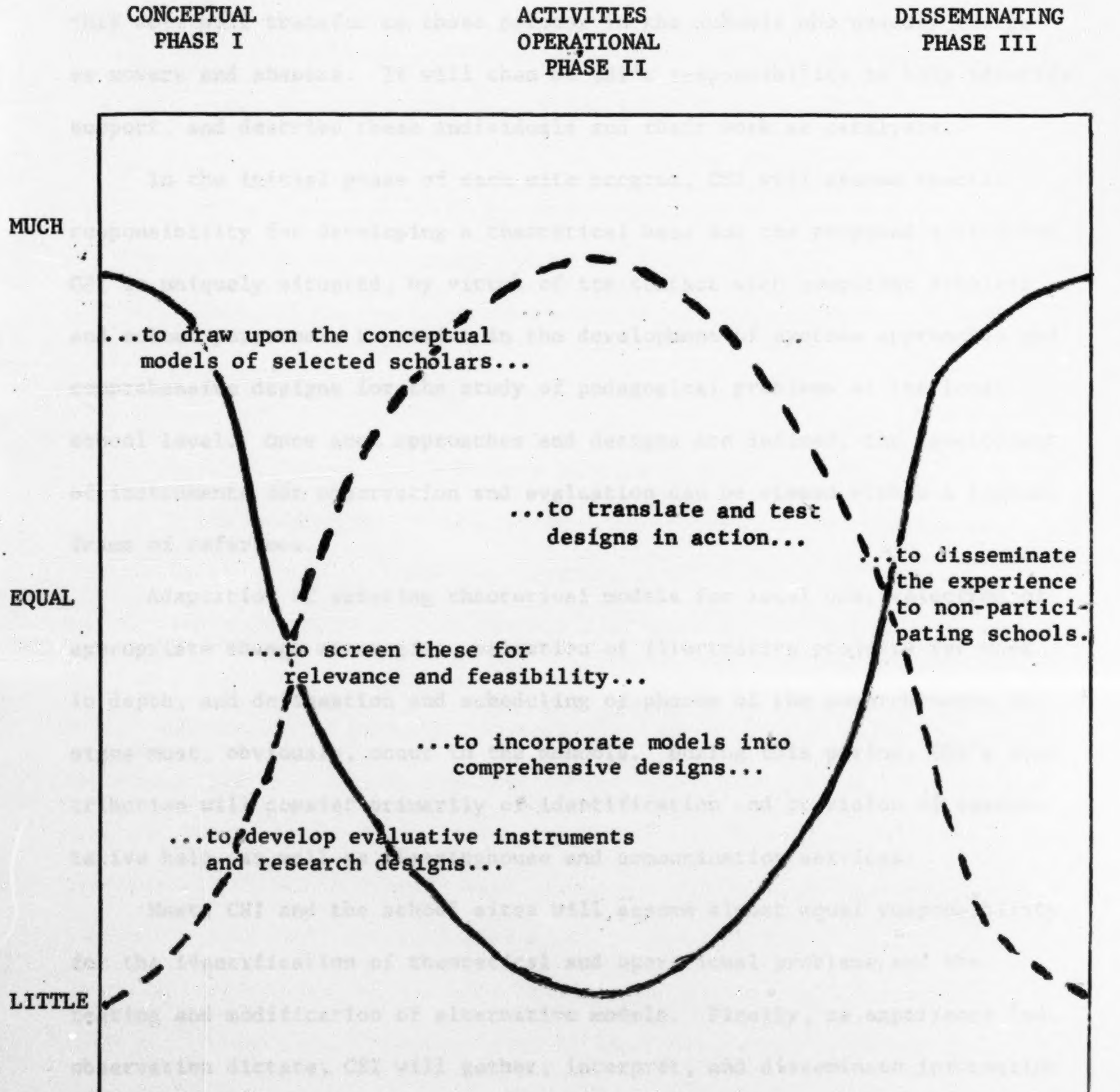
2. General Program Activities

CSI and the school sites expect to work together to achieve the goals and specific objectives of this consortium. Each of the participating institutions, however, has special capabilities to bring to the task at different stages of the program. Although it is impossible to be precise about degrees of responsibility for different members of the consortium, an attempt has been made to visualize the ebb and flow of joint enterprises in Exhibit III. The reader will note that the objectives suggest three major kinds of activities in sequence--conceptual activities, operational activities, and dissemination activities. The duties of CSI are heavy in the conceptual and dissemination phases, and the schools contribute most heavily in the operational phase. It must be emphasized again that no consortium member can avoid some responsibility at each phase and for each objective. The discussion which follows gives more detail about these relationships.

With the exception of Site One--Montgomery County, Maryland--the school participants in this consortium will be in a relatively unsophisticated

EXHIBIT III

A FLOW CHART SHOWING RELATIONSHIPS BETWEEN CSI AND PILOT SCHOOL SITES -- RESPONSIBILITY FOR MAJOR ACTIVITIES



stage regarding the rational planning of curriculum and instruction. Hence, the immediate role of CSI and its representatives vis-a-vis staffs in these school systems (other than officials responsible for sealing the consortium pact) will be primarily that of change agents. As the programs take hold, this role will transfer to those persons in the schools who usually emerge as movers and shapers. It will then be CSI's responsibility to help identify, support, and describe these individuals and their work as catalysts.

In the initial phase of each site program, CSI will assume special responsibility for developing a theoretical base for the proposed activities. CSI is uniquely situated, by virtue of its contact with competent scholars and school personnel, to assist in the development of systems approaches and comprehensive designs for the study of pedagogical problems at the local school level. Once such approaches and designs are defined, the development of instruments for observation and evaluation can be viewed within a logical frame of reference.

Adaptation of existing theoretical models for local use, selection of appropriate change strategies, selection of illustrative projects for work in depth, and delineation and scheduling of phases of the comprehensive designs must, obviously, occur in the schools. During this period, CSI's contribution will consist primarily of identification and provision of consultative help, as well as clearinghouse and communication services.

Next, CSI and the school sites will assume almost equal responsibility for the identification of theoretical and operational problems and the testing and modification of alternative models. Finally, as experience and observation dictate, CSI will gather, interpret, and disseminate information about the total program.

As noted earlier, the sites will be in different stages of development and will enter the consortium at different times. Their methods of

attack on the problem will also vary. There are, nevertheless, common objectives for all as well as some important activities for which each testing site must assume major responsibility. These activities are:

a. delineating objectives for the local system

b. screening recommended conceptual schemes for relevance and feasibility against local profiles and objectives

c. adapting theoretical models and formulating a comprehensive design

d. gathering the descriptive data needed to build evaluative instruments and research designs

e. planning and operating the total design program, including selecting change strategies, scheduling internal projects, selecting and organizing personnel, materials, evaluation, and in-service activities

f. testing and modifying local designs.

3. Program Activities--CSI

A basic task of CSI in this program development is to bring to the schools of the consortium the best thinking about theories of curriculum and instruction. This will be done through dialogues and colloquies with scholars and researchers and through the compilation of materials containing selected précis and reviews of existing literature. One major responsibility will be the conception of a systems approach to the problems described. A "systems" approach involves identifying strategic components to be considered and planning activities that contribute to the scientific study of these components.[1] This can be done by periodically convening school people and theoreticians who are willing to come to grips with the problems of making ideas operational and who are willing to examine empirical evidence from the schools.

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[1] Robert Glaser (ed.), Training Research and Education (Pittsburgh: University of Pittsburgh Press, 1962).

Two seminars of this nature are envisaged each year. Initial planning suggests the following topics, subject to change by the needs of the developing program and the problems of the school systems:

The Rational Planning of Curriculum and Instruction:
The Essential Components--1966-67

This seminar will focus upon the identification of components in education rather than upon an analysis of their relationship to each other. Participants will be expected to have identified components previous to the seminar and to have organized them into some type of overall design. Identification of common elements in the design will be sought. The seminar will also attempt to develop a common terminology in the building of comprehensive curriculum designs. Agreements established will provide a nucleus for a language that will be used by persons in the consortium.

The Rational Planning of Curriculum and Instruction:
Systems Approaches to Research and Management--1966-67

The preceding seminar concentrated upon identification and terminology rather than upon the complex problems of bringing the components into a conceptual scheme or theory. The intent of this seminar will be to develop systems based on the interlocking relationships of essential components.

The Teacher as Diagnostician in the Urban School--1967-68

This seminar will seek ways to help teachers become better diagnosticians and to suggest how various successful teaching strategies developed during the last decade can be more widely used in classrooms. The problem is particularly acute in the urban areas because of large classes, few auxiliary services, many uncertified teachers, and limited instructional resources.

Design for Science: A Prototype--1967-68

This seminar will bring together specialists in science, learning theory, curriculum, and psychology to examine a science design developed in a rational curriculum development program at the Montgomery County Public Schools. Participants will be asked to assess the quality of the end results, to determine to what extent the goals of the community and the profession are reflected in the program, and to evaluate the usefulness of the design as a prototype for other substantive areas.

A Community Defines Its Educational Goals: Problems and Prospects--1968-69

This seminar will study the process by which a community defines its educational goals. Does each school district have goals that are unique? To what extent do national curriculum projects reflect the goals of local communities? How necessary are national goals?

Case Studies in Planned Change--1968-69

The participants in this seminar, using several actual case studies from the consortium, will attempt to determine why curriculum and instructional practices developed at the institutional level frequently encounter resistance at the instructional level. The emphasis will be upon providing insights into the successes and failures of specific activities in sites rather than developing new models or theories.

Moving from the general discussion of theoretical problems to the specific, CSI will take the lead in helping pilot school systems to screen the concepts outlined in the colloquies, dialogues, and seminars for their relevance and feasibility in local situations. It will do this by calling upon appropriate members of the CSI consultant teams to articulate criteria and to develop mechanisms for matching models and local situations. For example, a local problem in high teacher turnover might indicate that attention should focus first on principals rather than on teachers as change agents. In this situation, CSI and the site personnel would likely draw on research and theory in leadership training rather than upon change in teacher behavior. Or, a small stable community might respond more readily to comprehensive development of curriculum and instruction via initial teacher involvement in adaptations of national projects in the disciplines.

School systems moving toward locally selected comprehensive curriculum and instructional design must inevitably reckon with questions which pertain to the dynamics of the whole--that is, to what extent does the proposed comprehensive conceptual system: (1) permit the learner to interplay effectively his knowledge from one subject area to another and from the specific to the general case; (2) achieve balance between the content to be learned and the cognitive processes through which it is to be learned;

(3) consider the major figures in the drama, i.e., the policy-setting agency, the principal, the instructional supervisor, the teacher, and, most importantly, the children in the classroom; and (4) provide for carefully considered objectives that are explicitly stated in such a fashion that they can be assessed?

At this stage, CSI will assist the pilot site by calling on appropriate consultants and pedagogical scholars to find answers to questions such as these, to pose others that may have been overlooked in the development of the comprehensive design, and to provide periodic critiques as the local design takes shape.

When a school system has arrived at general agreement on its own comprehensive pattern and has evolved a plan of operation, it will require a series of research designs and instruments to evaluate the comprehensive design in action. Thus, the rational planning of curriculum and instruction takes on a self-correcting direction: objectives are set forth, achievement strategies are deployed, assessment occurs, modifications of design and strategies can then be made until the system has some assurance that its plans and strategies do indeed achieve its overall objectives.

In many instances, appropriate instruments for such assessment do not exist. Yet, assessment of this sort is the crux of a self-correcting school system's planning. The two testing sites now considered under this program--Montgomery County, Maryland, and Philadelphia, Pennsylvania--are large enough to have some resources available to attend to this phase of the program. In these cases, CSI and the schools will share responsibility for this highly technical task, i.e., a review, evaluation, and adaptation of such instruments as do exist and the construction of new instruments for observation and evaluation. Should a small school system with little technical and material resources be chosen as a testing site, as seems likely, CSI will assume major responsibility for these developments. The kinds of observation and evaluation instruments which will be required are too numerous to describe here. Some indication of the scope of these activities may be found in Appendix H.

CSI will provide the means through which experience gained in this planning program can be disseminated to non-participating schools and school systems. Four avenues are envisioned:

a. Regular communication with consultants and researchers via visitation, conferences, and workshops.

b. Use of four observer teams (one team for each testing site) from similar but non-participating school systems. They will interpret the program elsewhere and, at the same time, will contribute to the definition of problems of communication and adaptation of the program in other settings. Five persons per site will be chosen by CSI, with the concurrence of site personnel.

Observer activities, jointly planned, will be on an ad hoc basis but will include: (1) attending at least one seminar with scholars on a theoretical problem; (2) attending at least one site planning meeting on the adaptation of theoretical concepts to local practice; (3) opportunities to observe the local program in progress and to meet with site personnel on specific problems, such as the building of research and assessment designs or of in-service training programs; and (4) regular communication with the CSI central staff.

Observers from school systems such as Los Angeles, Detroit, Pittsburgh, Atlanta, and Washington, D. C., will make up the team for Philadelphia. Observers from Dade County--Florida, Fairfax County--Virginia, San Diego County--California, the Educational Research Council of Greater Cleveland, and the Evanston Public Schools in the Chicago Area will pair with Montgomery County. Obviously, as further sites are chosen, comparable teams will be established and opportunities will be provided for joint meetings of teams.

c. Publication of periodic reports through the NEA Publications Division and through publications of the 33 departments to reach the vast NEA audience.

These reports will be on both general and specific facets of the program. For example, some theoretical position papers will come out of the current planning grant.[1] Other research papers are in the planning stage. On the other hand, publication of some of the observation and evaluation instruments to be developed would be of specific value to many schools before a general progress report on the program could be made available.

As the regional CSI consultant teams are involved in the theoretical planning stages of this program and as they receive regular progress reports, they will constitute a network of spokesmen who can interpret the aims and means of the program to the schools, school systems, and professional associations with which they are involved in their geographic areas.

d. Utilization of resources of regional laboratories as they become operational.

4. Program Activities--Site One--Large Suburban School System--Montgomery County, Maryland--1966-69

The major thrust in Montgomery County will be to manage and evaluate change in classroom practice required by prior comprehensive institutional planning. This site has already established its objectives and has agreed upon a theoretical design for curriculum and instruction. (See Exhibit II, page 21.) In addition, this system has set for itself a series of large tasks related to its educational objectives and to the theoretical design in use. These are:

a. The articulation of educational goals consistent with the values of the community, with man's funded knowledge, and needs of the learner.

b. The development of precise curriculum objectives for each major subject (K-12) and for the total program.

c. The exploration and use of practical ways to translate these objectives into classroom action--a study of the dynamics of curriculum change in action.

d. The development and testing of various guidelines for school and classroom management and organization.

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[1] The Airlie House Papers are currently being edited. Publication is expected in the fall of 1966.

e. The systematic evaluation of both the processes and the products of building and use of rational planning.

f. The study of the effect on the behavior of teachers and learners of the use of different design models.

Considerable work has gone into tasks a, b, and d to date. The main push now is the study of planned change in the classroom--a combination of tasks c, e, and f. Secondary projects are related to tasks a, b, and d. Thus, Montgomery County provides an excellent laboratory for succeeding sites in the study of planned change in the classroom, in the development of research instruments, and in the assessment and modification of theoretical designs.

Project One - Montgomery County

Curriculum designs in a number of academic fields are in progress in Montgomery County, but the science design is the first to have been completed. It will be used, therefore, as the prototype for change in classroom practice. Between 1966 and 1969, the school system will attempt to acquaint 2500 elementary school teachers with a design which emphasizes a series of behavioral objectives in science. The central aim is to change the curriculum and instructional practices in science in all the elementary classrooms of the county. Workshops are already underway this year for 600 teachers in three geographical areas. Eleven carefully selected units will be used to illustrate the directions and demands of the new set of evaluative criteria specified by the design. The full range of activities for the next three years, including refinements of the design, staff development, etc., is outlined in Exhibit IV.

EXHIBIT IV

SCHOOL SYSTEM ACTIVITIES DESIGNED TO EFFECT AND STUDY PLANNED CHANGE IN CURRICULUM AND INSTRUCTIONAL PRACTICE

Activities	1966-67	1967-68	1968-69
Refinement of the design	Review of the literature and critique by competent authorities.	Modification of the design and model after feedback from tryouts in classrooms.	Continued modification and validation of the design.
Selection and/or Development of Classroom Materials.	Review, selection, and adaptation of guides and materials from major science curriculum efforts; development of local materials as needed; informal classroom tryouts of sample materials.	Continued selection and adaptation of national materials and development of local materials; refinement and packaging after tryouts; informal classroom tryouts of sample materials.	Continued selection and adaptation of national materials and development of local materials. Refinement and packaging after tryouts. Informal classroom tryouts of sample materials.
Research and Evaluation.	Initial building and testing of evaluative instruments and research designs; use of those already developed; collection of data; training of research teams.	Use and refinement of evaluative techniques; collection, processing and interpretation of data.	Continued observation and evaluation on a large scale, collection and interpretation of data regarding effectiveness of materials and of the process.
Staff Development	Orientation and training of project staff; planning, organization, and implementation of in-service program for designated principals and teachers; 90 workshops per year for 600-700 teachers; summer workshops for 50 teacher leaders.	Continued training and development of project staff, teachers, and principals; continued workshops at the same levels.	Continued training of teacher leaders, principals, and teaching staff; continued workshops at the same levels.
Coordination, Management, and Communication	Involvement of all administrators and supervisors through information, budgetary, and planning sessions; preparation and publication of reports; management of the program.	Continued involvement of leadership group; more intensive work on preparation and dissemination of information.	Management and supervision of the new program.

Project Two--Montgomery County

At the same time the school system tries to study change in classroom practice, the county will concurrently be pushing forward its K-12 designs in all other areas. As these mature, the interrelationships among the subject areas will be studied and documented. Existing papers will be edited and published. Working conferences, at the rate of two or three a year during the three-year period, will be held to obtain critical evaluations of the overall institutional design and of all subject designs. Needed for such evaluative sessions are representative academic scholars, learning theory and child-development specialists, as well as experts in curriculum theory.

In addition, a re-examination of the county's goals of education and a reconsideration of the respective roles of the community, the board of education, and the central office staff will be important activities for the second and third years of the project. The assistance of consultants in the fields of political science, educational administration, sociology, and analytical philosophy will be sought. End products will be a more nearly precise statement of educational goals and a clearer definition of policy in the fields of curriculum and instruction than now exist. This project is designed to further tasks a and b listed earlier.

Project Three--Montgomery County

A third Montgomery County project relates to achieving more specificity when overall county objectives are translated into individual school and classroom organization and management. The county has prepared preliminary sets of operational criteria based upon its comprehensive planning scheme to be tried out by elementary and secondary schools. In the course of the next three years, a series of three schools (one elementary, one junior high, and one senior high school) will be selected to study and modify these standards. Additional specifications relating to school and classroom organizational patterns and to teaching strategies will be developed during this period. This project is designed to forward task d in the list of basic tasks for the county.

5. Program Activities--Site Two--Large Urban School System--Philadelphia, Pennsylvania--1966-69

The second site for a school-based development and field-testing center is chosen as representative of the grave problems faced by large city schools. Activities in Philadelphia will be planned during the first year of operation by a small team of curriculum and research personnel attached to the Philadelphia central office. Their functions in the first year will be:

a. to study the local situation in depth

b. to explore with the local staff effective ways of introducing the rational planning of curriculum and instruction

c. to identify kinds of consultative help CSI can provide and to attend relevant CSI seminars

d. to draw on action programs in Montgomery County through visits and consultations when appropriate.

Initial contact with the Superintendent of Schools in Philadelphia suggests the possibility that one point of entry might be through joint planning for inner-city schools by parochial, independent, and public school personnel. He also indicates that the new Regional Laboratory, "Research for Better Schools, Inc.," a potentially powerful agency in the area, could be an alternate point of entry. Certainly, the program of the laboratory will warrant investigation by our team in Philadelphia before firm long-term plans are made. Explorations in the first year, therefore, will determine the activities in the second and third years. Our expectation is that the

Philadelphia program will approximate the size of the Montgomery County program in years 2 and 3, although it is probable that the personnel will be deployed in different ways. We have, accordingly, budgeted with that scope in mind.

6. Program Activities--Sites Three and Four-- Isolated Rural and Private School Systems--1967-69

Sites three and four will be selected during the remainder of FY 1966, and initial planning with their staffs will begin in FY 1967. In both sites the same staff positions specified for Philadelphia will be required and the functions of the curriculum and research team will be similar to those outlined for the urban center program. Since the team's function will be essentially that of change agents, flexibility in their operations is an absolute necessity, particularly during the first year. It is, therefore, impossible and unwise to specify activities beyond site explorations and the obvious maintenance of communication and consultation with CSI and other sites in the program.

7. Summary of Major Activities for the Consortium--1966-67

In order that the reader may have a simplified summary of the activities discussed in this section, Exhibit V shows the major activities projected for the first year of operation.

EXHIBIT V

SUMMARY OF MAJOR ACTIVITIES FOR THE CONSORTIUM--1966-67

	CSI	Montgomery County Public Schools	Philadelphia Public Schools
CONCEPTUAL ACTIVITIES	Keep up with the literature and prepare précis. Plan seminars (2) 1) The Essential Components of Rational Planning of Curriculum and Instruction. 2) Systems Approaches to the Planning of Curriculum and Instruction. Plan small working conferences with consultants and school people. Review the research and evaluation literature. Conceptualize and develop research designs and observational and evaluative instruments.	Refine existing institutional curriculum models in all subjects.(K-12) Develop an overall institutional design for the county, showing interrelationships between subjects and methods of inquiry. Review two or three designs (including science) with relevant academic and pedagogical scholars. Conceptualize and develop research designs and observational and evaluative instruments.	Acquaint selected leaders with conceptual framework. Visit CSI and Montgomery County. Attend seminars and conferences.
OPERATIONAL AND MANAGERIAL ACTIVITIES	Select and organize new personnel. Organize coordination and communication services for the consortium. Set up regular planning sessions with schools. Expand and reorganize existing CSI consultant teams. Select sites three and four and observer teams. Organize joint conferences and seminars.	Select and organize new personnel. Supervise and operate a study of planned curriculum change for 2500 classrooms including: 1) further development of instructional material; 2) planning and operation of 90 workshops per year for 700 teachers and principals and a summer workshop for 50 teacher-leaders; 3) planning and operation of informational sessions for all administrators and supervisors. Make systematic observations of the	Select new personnel. Study the local situation for strategic point of entry. Plan with local staff the program for 1967-69. Identify kinds of consultative help needed. Organize liaison with the Regional Laboratory.

Summary of Major Activities for the Consortium (continued)

	CSI	Montgomery County Public Schools	Philadelphia Public Schools
	Set up and organize the executive council. Start planning for the next two-five years.	process of change and of the results using existing techniques. Refine and develop preliminary operational criteria for school and classroom organization and management.	
DISSEMINATION ACTIVITIES	Plan and supervise activities for observer teams. Communicate regularly with CSI consultants and researchers. Prepare and publish periodic reports. Publish Airlie House Papers on curriculum planning. Prepare and circulate position papers. Edit reports and papers prepared for seminars. Organize regular communication with regional laboratories.	Prepare progress reports for CSI. Keep county professionals informed. Prepare, edit, and publish papers on curriculum design in all subjects and for the total program.	

C. The Use to be Made of Findings

This is the only national program, to our knowledge, that undertakes to illuminate and illustrate the process of rational curriculum development of a total school program by demonstrating the full complexity of the major components in action. Also, it is the only comprehensive school improvement program directly linked with a nationwide dissemination network.

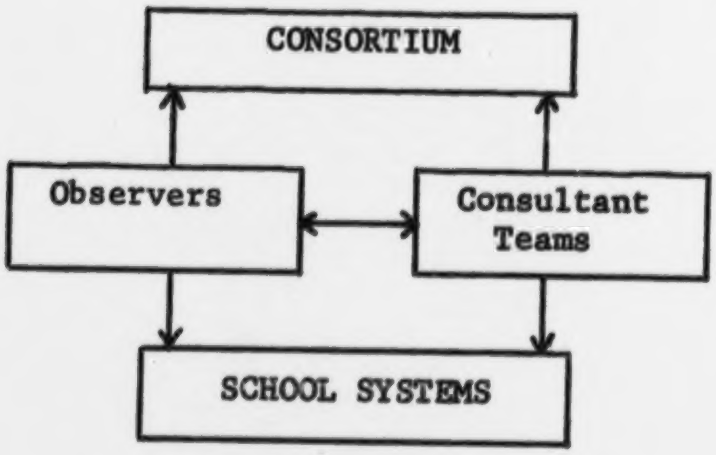
A considerable amount of descriptive and evaluative data will emerge from this program. Several means of dissemination are anticipated. Many of the findings from the consortium will be published in the various journals of the NEA, such as, the NEA Journal, The National Elementary Principal, and the Bulletin of the National Association of Secondary-School Principals. Reports will be published in monograph form. Major seminars will form the base for collected papers and published symposium reports.

Rather than rely on written material alone, numerous filmstrips and short films will be prepared. The consortium will also recruit several persons who will leave their home school districts for short periods of time and return directly to their school systems as catalytic agents after observation and study in the consortium.

A promising method of disseminating the findings will be through the CSI consulting teams. In time, the teams expect to blanket the nation. Even now, over 80 per cent of the population of the nation is within one hundred and fifty miles of a CSI consulting team. These teams will become one of the principal means of using the research findings of the consortium in actual school settings. More than an article, a monograph, or a visual device, the consulting teams will provide school systems with the personal advice of academic and pedagogical scholars familiar with the work of the consortium. Particular emphasis will be placed on those school systems that have sent observers to the consortium. Thus, the lines of communication will be from the consortium to the catalytic agent to the local school system and from the consortium to the consultant teams to the local school system. This arrangement will insure that consultative efforts will be invested in school districts interested enough in reform to provide observers or catalytic agents. (See Exhibit VI.) It further insures consultative assistance for the observer who may find that his efforts are not meeting with universal endorsement after he returns to his own school setting.

EXHIBIT VI

COMMUNICATION FROM CONSORTIUM TO OBSERVER SCHOOL SYSTEMS



In addition to these ways of reporting to and involving the profession, another means of dissemination will be used. This is the linkage of the consortium with other similar institutions now being generated throughout the nation such as the network of Regional Laboratories, the League of Cooperating Schools in Los Angeles, the Center for Coordinated Education in Santa Barbara, and the existing National Training Laboratories in Washington, D. C. All of these institutions, including the CSI consortium, are approaching the problem of the institution and management of change with differing sets of assumptions and procedures. A continuing communication among these institutions as their programs develop will provide for cross-fertilization of ideas and a more rapid diffusion of new practices into the schools. Representation from such institutions will be sought for the executive council, the observer teams, and the CSI consultant teams.

More significant than any of these efforts at dissemination, however, is the possibility of the eventual establishment of an institute that could offer advice and assistance to persons seeking it. To be sure, this potential cannot be realized within the three-year life of this program, since the tasks already defined will extend well beyond three years. As the consortium gets underway, however, it may well become a center to which school systems turn for sustained consultation, research skills, in-service education, and other services as they attempt themselves to develop rational planning consistent with local needs. Budding regional laboratories and directors of national curriculum projects may find the theoretical and operational schemes emerging from this consortium useful in their work. Indeed, while now only an organization in embryo, this consortium holds the promise of bringing to the teaching profession the same quality of leadership the medical profession finds at the National Institutes of Health.

APPENDIX F

ROSTER AND MAP OF CONSULTANT TEAMS

ROSTER OF CONSULTANT TEAMS

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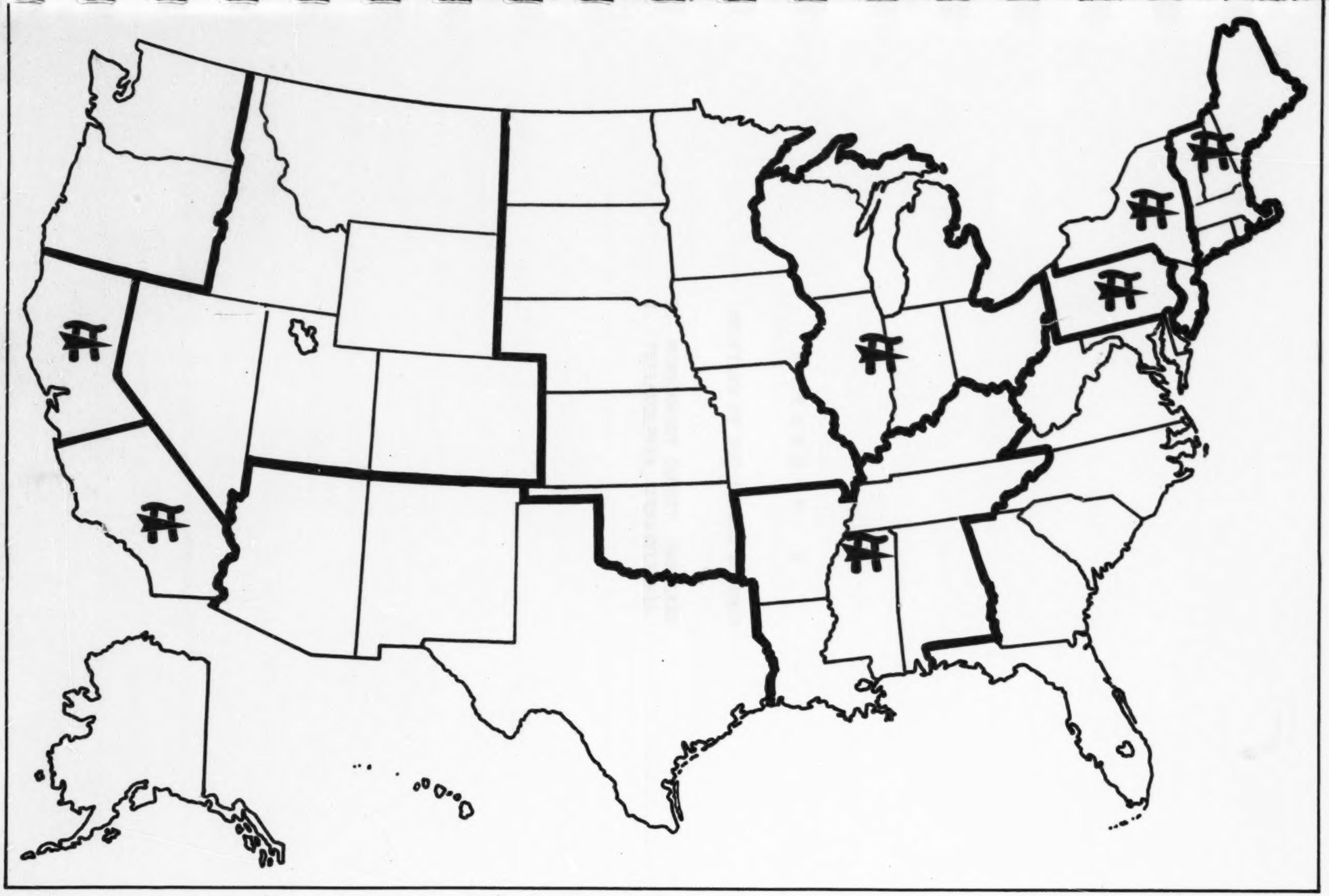


[1] Regions already served by CSI teams are indicated by our symbol. They are: New England, New York-New Jersey, Pennsylvania, South-Central, Great Lakes, California-North and California-South.

Teams are planned for regions shown without a symbol. They are: Southeast

APPENDIX G

PROFILES OF THE SCHOOL SYSTEMS

1. MONTGOMERY COUNTY, MARYLAND
2. PHILADELPHIA, PENNSYLVANIA

MONTGOMERY COUNTY

Profile of the School System

Montgomery County, Maryland, is a large, wealthy, political unit comprising one of several burgeoning population areas surrounding Washington, D. C. Its approximately 500 square miles contains a population of some 425,000. According to the most recent figures average family income exceeds $13,000. The county probably now houses as many Ph. D.'s per square mile as any other district in the United States.

Certainly a large proportion of county residents are professional, scientific, and managerial people who demand a high level of academic performance for themselves, from their children, and from the school. As might be expected, the school population is skewed toward the academically talented. This fact, however, can be misleading since the student body contains in sizeable numbers a full range of educational interests, aptitudes, and parental backgrounds. Indeed, there remain small pockets of real poverty, inhabited by both Negroes and whites, as economically and culturally desperate as sections of Appalachia or portions of the District of Columbia.

Montgomery County is a community in the throes of rapid social and economic change. Only a few decades ago it was essentially a rural area, characterized by large farm holdings dating back to grants from the English Crown. A landed gentry from these estates and a conservative elite from such comfortable suburbs as Chevy Chase made up a recognized social and political leadership group. In a relatively short time, this traditional stability was shattered. The infiltration of "outsiders" began in the thirties with the expansion of the federal government and the ensuing movement of employees into Montgomery County. The population doubled in the forties and again in the fifties, and growth continues with no respite in sight.

Almost overnight what was once a simple open community became a complex urban and suburban area. As a reminder of the recent past, 900 farms have survived within the area. At the other extreme, four concentrations of population--Silver Spring, Wheaton, Bethesda, and Rockville--account for 60% of the county's population. The prevailing pattern is suburban, as indicated by the fact that over 80% of the population live in private homes. Quite obviously, Montgomery County is fast becoming part of the megalopolis predicted to stretch eventually from Richmond to Boston along the East Coast.

Montgomery County is one of the few counties in the nation with a council-manager government operating under a charter. The council is made up of seven members elected for four-year terms. The council appoints a county manager who serves as chief administrative officer of the county. Montgomery County also elects its school board--the only county in Maryland to do so. Seven board members elected for four-year terms serve without compensation.

It is typical of such rapidly growing areas that the school population increases more rapidly than the total population. Today's figure of 425,000 is roughly five times that of 1940; the school population is seven times greater. In the past five years the school system has enrolled approximately 6,000 new students, and has built an average of 250 new classrooms a year. The school population represents roughly one person in every four of the population. It is easy to understand why the school system has experienced growing pains. From a loosely structured series of schools, each intimately and personally related to its local community as well as to the central authority vested in the Superintendent of Schools and the Board of Education, the school system has become a complicated organization inevitably involved in big business, bureaucratic procedures, and mass education. There are now 113 elementary schools, 36 secondary schools, and one junior college. (See tables at the end)

In 1957, the Board of Education began a reorganization of the system to enable it to deal with the complexities of its tasks and, hopefully, to prepare it to meet the demands of the future. Long-range plans and schedules for the building and maintenance program were established. Personnel policies were overhauled to ensure adequate numbers of qualified teachers. Administrative procedures were developed to replace the more informal personal liaison that had sufficed in simpler days. As a measure of decentralization, geographical administrative districts were gradually defined, each containing at least one senior high school and its feeder junior high and elementary schools. In 1965, twelve such districts had been organized each under an area director. There are approximately 10,000 students in each district.

The period of rapid growth was also a period of proliferation, for with growth came the necessity for greater specialization and differentiation of function. An office of research and an office of staff development were set up, followed quickly by such offices as curriculum development, pupil services, instructional materials, supervisory services, and testing. Opportunities offered by the school system to the community were also becoming more varied. A junior college was established in 1946 as a night school. In 1950, a building and campus were purchased and the college put on a full-time basis. In 1965, a second campus was added at a cost of $4 million. The total enrollment in October, 1965 was 3,697 of whom 2,245 were full-time students. The college, and all the high schools in the system, are accredited by the Middle States Association and Maryland State Department of Education. High school courses lead to college-preparatory, general, business, or vocational diplomas. In addition to the usual K-12 school day programs, the school system now offers Project Head Start, summer education and enrichment programs, the Neighborhood Job Corps, summer schools, evening high school, adult education, home teaching, and out-of-county placement. It all costs money. From a budget of $1,164,396 in the happy days of 1940 the budget has increased to $68,435,118 for fiscal 1966.

As in other fast growing areas, the pressure on the tax rate ensures that school expenditures will be a lively concern of county residents. On the other hand, there is considerable local pride in the school system, which has the reputation for being well above average in quality and service. There is citizen pressure for improvement as well as for economy, with some groups seeking to take an active part in influencing school policy and curriculum decisions. While these efforts range from the helpful and inspiring to the annoying and obstructive, they are evidence of wide citizen involvement. The Montgomery County school system can never complain that it is taken too much for granted by those it serves.

EXHIBIT I

Present Dimensions of Montgomery County Public School System, FY 1966

Number of elementary schools - 113

Number of secondary schools - 36

Number of junior colleges - 1

Number of elementary professional personnel - 2481

Number of secondary professional personnel - 2348

Number of junior college professional personnel - 127

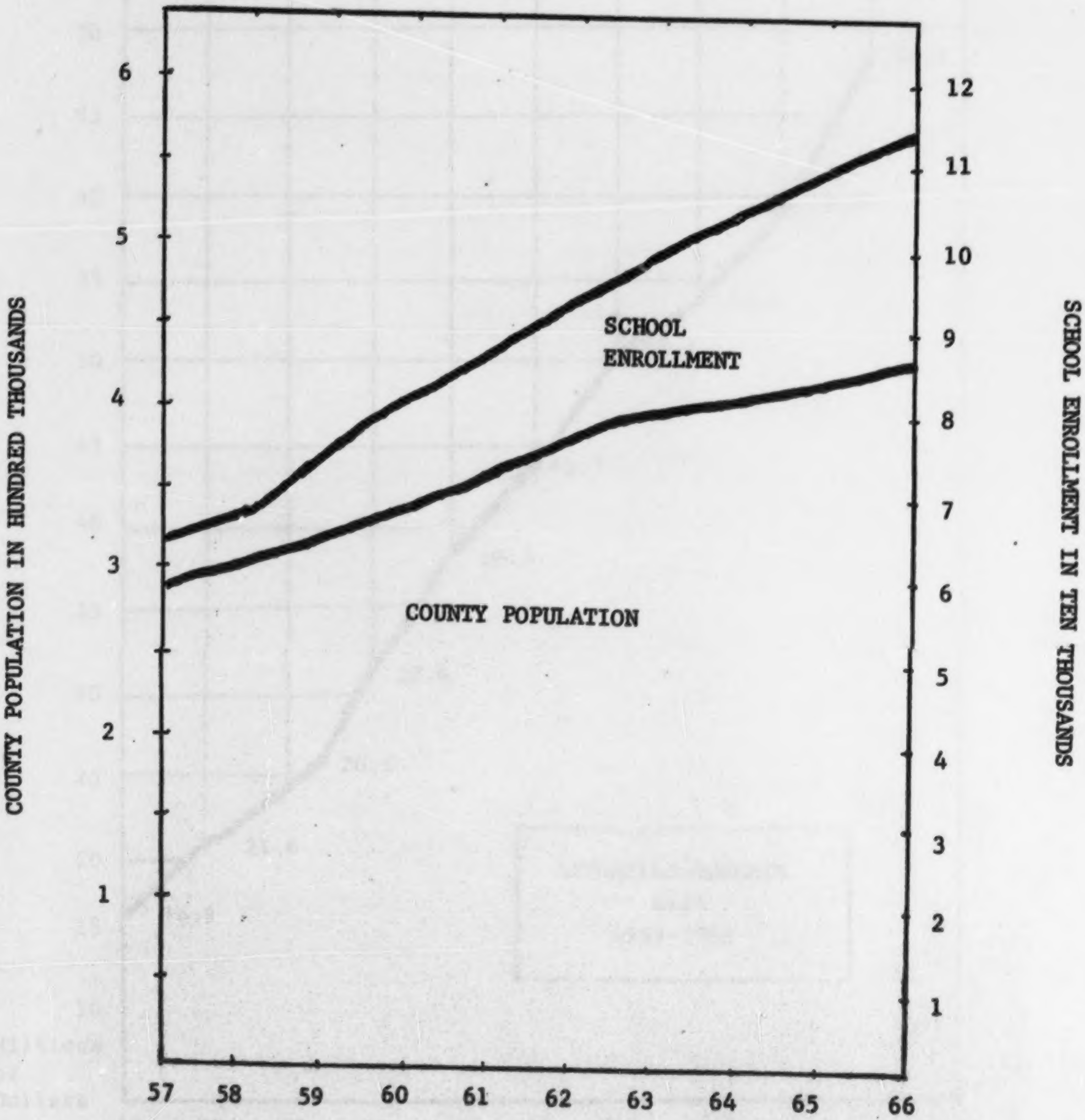
Number of supporting services personnel - 3000

Central office staff - 206

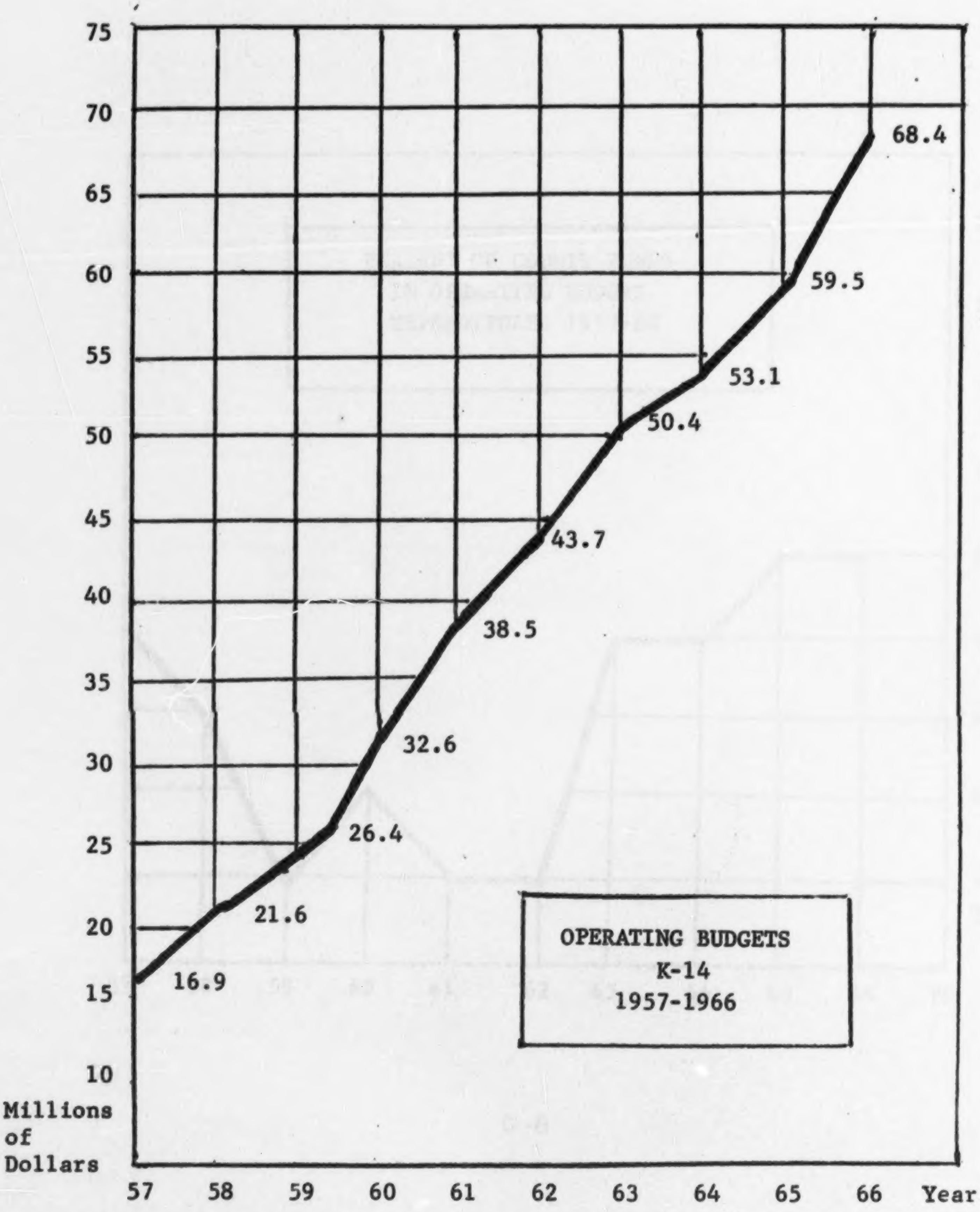
Number of elementary students - 60,185

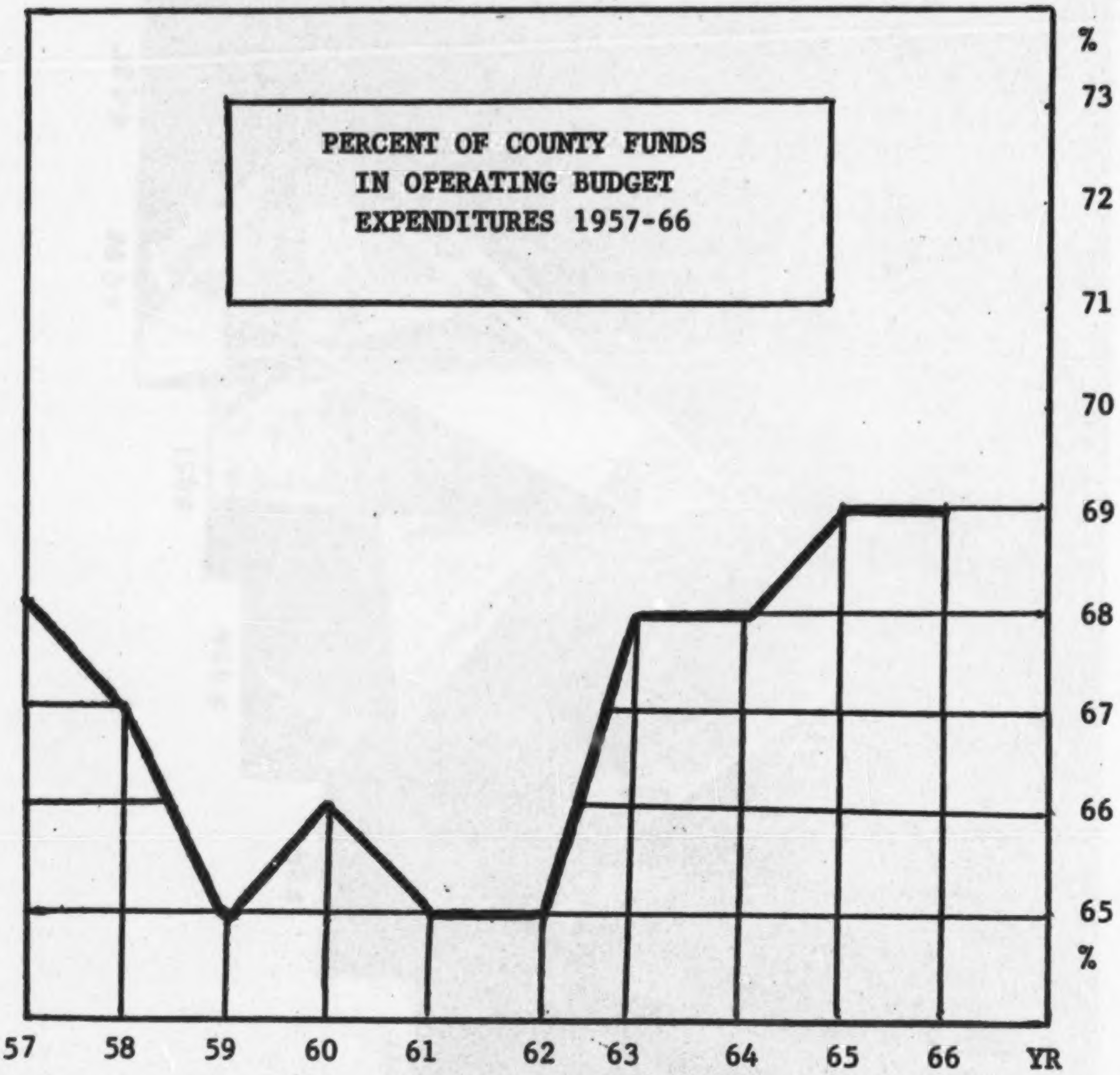
Number of secondary students - 45,655

Number of junior college students - 2,530


COUNTY POPULATION IN HUNDRED THOUSANDS
1
2
3
4
5
6
SCHOOL ENROLLMENT IN TEN THOUSANDS
1
2
3
4
5
6
7
8
9
10
11
12
SCHOOL ENROLLMENT
COUNTY POPULATION
57
58
59
60
61
62
63
64
65
66

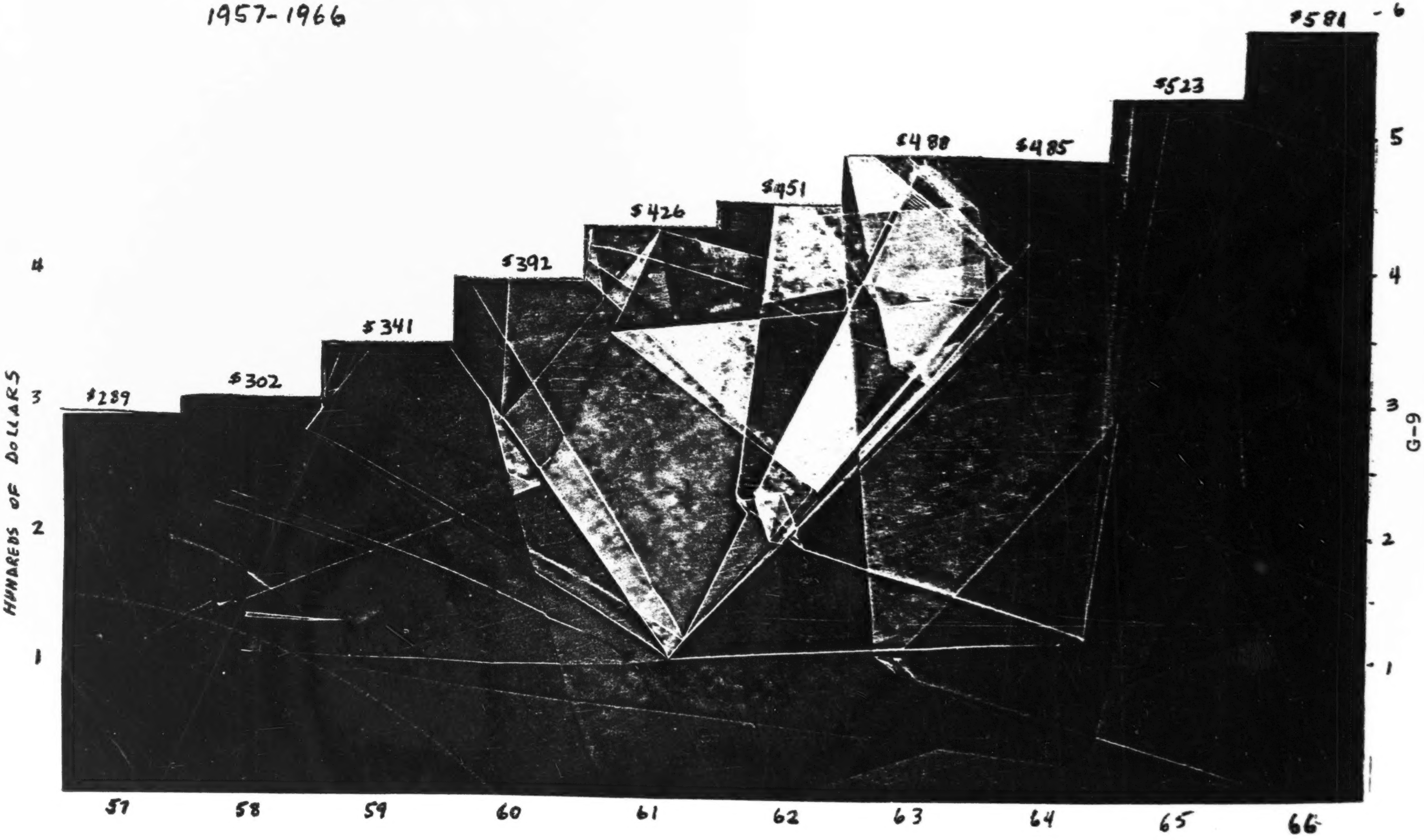
G-6


OPERATING BUDGETS
K-14
1957-1966
75
70
65
60
55
50
45
40
35
30
25
20
15
10
Millions of Dollars
57
58
59
60
61
62
63
64
65
66
Year
16.9
21.6
26.4
32.6
38.5
43.7
50.4
53.1
59.5
68.4


PERCENT OF COUNTY FUNDS
IN OPERATING BUDGET
EXPENDITURES 1957-66
%
73
72
71
70
69
68
67
66
65
%
57
58
59
60
61
62
63
64
65
66
YR

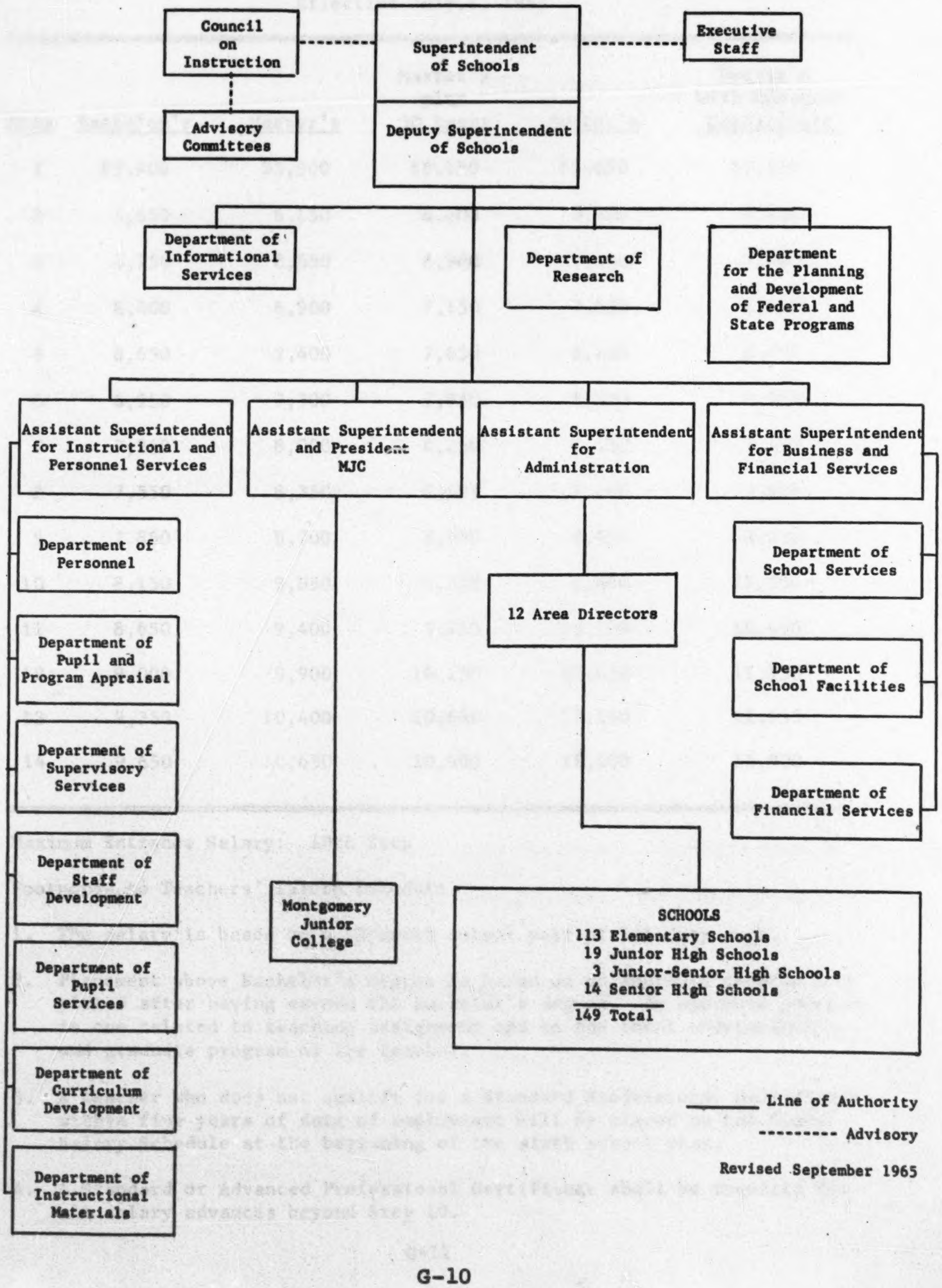
G-8

COST PER PUPIL
1957-1966



ORGANIZATION CHART OF THE MONTGOMERY COUNTY PUBLIC SCHOOLS

School Year 1965-66


Council on Instruction
Superintendent of Schools
Executive Staff
Advisory Committees
Deputy Superintendent of Schools
Department of Informational Services
Department of Research
Department for the Planning and Development of Federal and State Programs
Assistant Superintendent for Instructional and Personnel Services
Assistant Superintendent and President MJC
Assistant Superintendent for Administration
Assistant Superintendent for Business and Financial Services
Department of Personnel
Department of Pupil and Program Appraisal
Department of Supervisory Services
Department of Staff Development
Department of Pupil Services
Department of Curriculum Development
Department of Instructional Materials
Montgomery Junior College
12 Area Directors
Department of School Services
Department of School Facilities
Department of Financial Services
SCHOOLS
113 Elementary Schools
19 Junior High Schools
3 Junior-Senior High Schools
14 Senior High Schools
149 Total
Line of Authority
Advisory

Revised September 1965

MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

Effective July 1, 1965

Step	Bachelor's	Master's	Master's plus 30 hours	Doctor's	Doctor's with Advanced Certificate
1	$5,400	$5,900	$6,150	$6,650	$7,150
2	5,650	6,150	6,400	6,900	7,400
3	6,150	6,650	6,900	7,400	7,900
4	6,400	6,900	7,150	7,650	8,150
5	6,650	7,400	7,650	8,150	8,650
6	6,950	7,700	7,950	8,450	8,950
7	7,250	8,000	8,250	8,750	9,250
8	7,550	8,350	8,600	9,100	9,600
9	7,850	8,700	8,950	9,450	9,950
10	8,150	9,050	9,300	9,800	10,300
11	8,650	9,400	9,650	10,150	10,650
12	9,000	9,900	10,150	10,650	11,150
13	9,350	10,400	10,650	11,150	11,650
14	9,650	10,650	10,900	11,400	11,900

Maximum Entrance Salary: 10th Step

Footnotes to Teachers' Salary Schedule

1. The salary is based on a 10-month school year of 195 duty days.
2. Placement above Bachelor's degree is based on an approved program completed after having earned the Bachelor's degree. An approved program is one related to teaching assignment and to the total undergraduate and graduate program of the teacher.
3. A teacher who does not qualify for a Standard Professional Certificate within five years of date of employment will be placed on the State Salary Schedule at the beginning of the sixth school year.
4. A Standard or Advanced Professional Certificate shall be required for all salary advances beyond Step 10.

PHILADELPHIA

Profile of the School System

The Philadelphia School System covers an area of approximately 130 square miles which includes the heart of the historic city. The population of Philadelphia in 1960 was 2,002,512, and it is expected to reach 2,070,700 in 1970. Growth, as is frequently the case in inner cities, has been neither rapid nor regular. The decades 1930-40 and 1950-60 showed an actual decline. The 1950-60 loss was consistent with figures for many large cities at a time when suburban development was rapid. It was also consistent with a general loss of population in Pennsylvania as a whole.

When loss of population has occurred, it has been primarily a net loss of white population and an accompanying increase in the ratio of Negroes making up the total population. Where growth has occurred, the rate has been faster for non-whites than for whites.

Other substantial ethnic groups: Swedish, German, Irish, Polish, Puerto Rican, Russian, and Chinese are still living in geographically distinct areas of the city. In 1960, about one-fourth of Philadelphia's population was foreign born. The Negro population in Philadelphia in 1960 was 529,239, which ranked the city third in Negro population. The lower North Philadelphia section of the city contains 214,369 Negroes. Portions of South and West Philadelphia are also highly populated by Negroes, much more so than in 1950.

There was a rapid movement away from the city from 1950 to 1960. There was a loss of 69,093 persons or 3.3 per cent in that ten-year span. In the same period, suburban area population increased by 46.3 per cent.

The average family income in 1960 for whites was $6,269; for non-whites $4,248; and for Puerto Ricans, $3,435. The unemployment rate for males, also in 1960, was 5 per cent for whites; 10.7 per cent for non-whites; and 15.6 per cent for Puerto Ricans. In general, the same disparity exists today.

Differences in educational levels of whites and non-whites are less extreme. For persons 25 years of age and over in 1960, 44 per cent of whites and 50 per cent of non-whites had no schooling beyond the eighth grade. College graduates comprised 6 per cent of whites, 3 per cent of non-whites.

The full-time day enrollment in Philadelphia's schools in 1965 was approximately 265,000; close to one in seven of the population. The non-white population is younger than the white population in part because of high birth rate among the Negroes, and also because Negroes contribute proportionately more children to the public schools, a proportion that is increasing. Distribution of white and Negro children is far from uniform. It is estimated in 1970 that one sub-district will have 3,000 whites and 43,000 Negroes. At the other extreme, one will have 44,000 whites and 500 Negroes. There is quite a high enrollment in parochial schools. The rate of enrollment is apparently increasing faster than that in the public schools, although statistics are not fully comparable. It has been estimated that in 1961, parochial schools had 38 per cent of the total enrollment, with perhaps ten per cent of these pupils being Negroes.

Philadelphia was in an advantageous position for attracting teachers for a long time. The salary scale was good and working conditions pleasant. A change set in after World War II when the exodus to the suburbs was in full swing. Suburban salary scales were attractive and preferment easier. Also, Philadelphia's requirements for appointment were rigid and time consuming and, for those not living in Philadelphia, involved travel expenses. By 1955, Philadelphia was unable to fill many positions. The situation has further deteriorated. The shortage of teachers in September 1963 was estimated at over one thousand. In some secondary schools 25 to 41 per cent of the teachers are substitutes.

The organizational pattern of the school system is K-6-3-3, although there is some variation in the distribution of grades in the junior high years. For 1963-64, there were 251 regular schools of which 200 were elementary, 29 junior high, 19 senior high, and 3 technical high schools. To show the magnitude of the task, 121 schools have classes serving a total of 7,465 retarded educable students, with ten separate buildings devoted to special education. The system includes every type of program from day care centers to evening adult education classes attended by close to 50,000.

Two major efforts to lead the way in the improvement of the Philadelphia Public Schools are currently under way. The Educational Improvement Program was initiated in 1963 as an attempt to demonstrate the possibility of excellence in selected elementary grades of schools where levels of attainment were low. This, of course, was in neighborhoods with socio-economic deprivation. The Great Cities School Improvement Program, launched with funds from the Ford Foundation, is now supported by the Board of Education. In some ways similar, this program covers the whole range of elementary education and seeks also to move out into and to involve the community in school betterment.

It is to be expected in a school system with as long a history as Philadelphia's that not all buildings will be modern. Thirty-nine schools were built before 1900. Construction since then has been rather evenly spread out--with the exception of the war years. Philadelphia estimates that approximately 68 new school buildings will be required in the next six-year period. In March, 1966, the Board of Education announced a six-year, $434 million construction program that Board President Richardson Dilworth has called "the finest, most ambitious program any city approaching our size has ever had." New school buildings will include 11 four-year high schools, 20 new intermediate schools, and the replacement of all lower schools that are not fireproof. Construction plans are flexible to allow the possible shift of the city's schools to a 7-4-4 plan which has been proposed by a special study committee. The 7-4-4 arrangement calls for two years of voluntary preschool, kindergarten, and the first four grades in the lower schools. Intermediate or "middle" schools and upper schools would have four grades each. Some existing schools will be reorganized to fit this pattern next September on an experimental basis. The school board has not fully endorsed the plan, but believes that it offers educational advantages worth pursuing. The proposed building program hinges on a $60 million bond issue in the May 17 primary. Also under study in Philadelphia is the feasibility of an educational park.

Management of the Philadelphia Public Schools has had a history of turmoil. An article in Saturday Review describes the situation as follows:

> Public Education: In 1962 the Greater Philadelphia Movement completed a two-year review of public education in Philadelphia. We discovered that we had a school board selection process that discouraged citizen interest in public education. A large group of local judges appointed the fifteen-member Board of Education. The judges discouraged nominees from any other sources than the county chairmen of the Republican and Democratic parties. Members of the board, once appointed, were appointed over and over again. In fact, appointment to the school board had become a form of honor for those people retiring from active civic service.

> A powerful business manager of the school system had successfully shunted the superintendent of schools aside so that the superintendent was hardly more than a figurehead. The legislature of the Commonwealth, instead of our local city council, set local school taxes. There was no cooperation with city operations. By 1961, we were becoming aware, in the civic community, of the terrible challenges to effective public education that existed in Philadelphia and other cities.
>
> After GPM's two 1962 reports we expected that it would take about a decade to see real results. But in 1963, Commonwealth's General Assembly not only transferred the school taxing power from itself to Philadelphia's City Council, but also authorized the establishment of a commission to propose to the voters a new plan to govern the school system. The new plan, approved by Philadelphia voters last May, simplified the method of school board selection, put the superintendent back in the driver's seat, and encouraged, for a wide range of non-instructional activities, close cooperation between the school district and the City of Philadelphia. It followed closely the GPM proposals of three years earlier.[1]

Dr. C. Taylor Whittier was appointed Superintendent of Schools in 1964, and was also made Secretary of the Board and Acting Business Manager; thus becoming the first executive officer of the whole system and the sole person responsible directly to the Board of Public Education for its operation.

The 1966 Operating Budget is $172,844,000. There are six sources from which revenue receipts are derived. They are: real estate taxes, 51.4%; personal property taxes, 2%; general business tax, 58.7%; state appropriations, 30%; federal grants, 4.2%; and 2.8% from other sources.

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[1] William H. Wilcox, "Philadelphia: A Look at Techniques," Saturday Review, XLIX, No. 2 (January 8, 1966), p. 99.

APPENDIX H

A SAMPLE OF REQUIRED RESEARCH ACTIVITIES

A SAMPLE OF REQUIRED RESEARCH ACTIVITIES

Science (K-12)

Plans for the Development of Observational and Evaluative Instruments for Montgomery County Public Schools

The Montgomery County Public Schools have spent several years recently in an attempt to develop and implement a comprehensive design for the planning of curriculum and instruction.

Since study of the impact of these efforts upon the total program of curriculum and instruction is unmanageable, the school system plans first to examine a newly developing (K-12) science curriculum as a prototype of planned change in a large school system.

Initial planning with county experts in appraisal and research with regard to the specific observational and evaluation instruments needed includes the rationale and procedures which follow.

1. Evaluation of the Process and Product of Rational Planning

The data to describe process will include:

(a) Protocols on citizen participation in the definition of societal goals in science and the selection (if selection is involved) of curriculum emphasis. Included will be details on the organizational patterns for enlisting the participation of citizens in this effort to define goals of education, analysis of issues of delimiting the role of citizens to functions which they can best serve, etc.

(b) Analysis of the role played by the Board of Education.

(c) Reports on the selection of school personnel who are made responsible for analyzing the logical scope and sequence in science.

(d) Protocols on the selection of school personnel to align the choice of content with current knowledge of typical patterns of pupil development by age, sex, etc.

(e) Protocols on the process of producing the overall curriculum design in science to include detail on personnel involved, conferences held, working sessions conducted, production problems met, format considered, format selected, etc.

(f) Detail on the product(s); viz., copies of the written curriculum guides created, and instructional materials recommended.

Protocols will be developed from records kept by observers on the research staff of the project. The research observers will gather data on the basis of observation schedules, in the use of which they have been trained to insure observer reliability.

The development of the plan of observation and of the observation schedules, as well as the training of observers, will constitute a major technical task. The gathering of data on process will thus be highly structured and will yield data that can be treated statistically for similarities and differences among the experimental sites.

Similar data will be gathered by identical methods in the control situations, that is, in situations which use curriculum development procedures essentially different from those designated as "rational planning" procedures. Of course, in any site(s) in which one or another of the elements of process noted above has been completed when the research is initiated in the site, data on the completed phases will be secured by historical research from primary sources (the people who were involved) and secondary sources (written accounts of events).

The data to evaluate the product will include evidence of level of acceptance by:

(a) The public

(b) The Board of Education

(c) Supervisory specialists

(d) Central office administrators

(e) School unit administrators

(f) Teachers

This evidence will be secured through interview and questionnaire with the first five named types of respondents and by interview, questionnaire, and observation for the teachers.

2. Study of the Effect upon Pupil and Teacher Behavior

The study of the impact of decisions made through the process of the rational planning of curriculum and instruction will be conducted primarily as an analysis of observable pupil behaviors in the classroom. The curriculum design and guides will specify observable pupil behaviors or outcomes which can be expected as a function of teaching practices. These outcomes will be classified into major categories of cognitive, affective, and psychomotor behavior and will be illustrative of the attainment of several goals of education.

Specification of these outcomes in observable and research-oriented terms will constitute a major technical feature of this study. The achievement of this aspect of the study will require a joint and long-term effort on the part of specialists in child development, in the subject discipline, in research, and in pupil appraisal.

A variety of procedures and instruments for gathering relevant data will be required to assure the extent of pupil attainment of the specified cognitive, psychomotor, and affective outcomes.

The study of the impact of decisions made through the process of rational curriculum planning will also be conducted through analysis of observable teacher behaviors in the classroom. Time-sampled observations will be used to secure data on:

Teacher practices; viz., conferring, directing, demonstrating, listening, talking, writing, using instructional aids and equipment, etc.

Classroom organization; viz., whole class instruction, small group instruction, individualized instruction, etc.

Locale of instruction; viz., in regular classroom, in enlarged areas (where flexible partitions are available), in special interest areas, etc.

Interrelationships among staff members; viz., self-contained, departmental, team teaching situations, etc.

Relative emphases upon curricular areas and specific topics within areas

Student learning activities; viz., reading, listening, writing, constructing, observing, demonstrating, etc.

Immediate purposes of instruction; viz., school development, concept development, development of problem-solving techniques, study and research procedures, etc.

Materials of instruction in use: types and whether the same or different for all students in class.

Learning atmosphere: nature and amount of structure; source of decision on choice of purpose and activity (textbook, curriculum guide, teacher, student interest, etc.); interrelationships in the classroom.

The time-sampled observation will be conducted both in situations in which the rational curriculum planning is being demonstrated as well as in other control situations. The development of observation schedules will constitute a major research activity of the project, and the selecting of observers and their teams to secure observer reliability will constitute another major technical task. The data secured will lend themselves to statistical treatment to test the hypothesis of the difference among the modes of curriculum planning.

Additional data on the impact of the rationally developed curriculum will be secured through investigations of the percepts of school personnel as to functional changes in the instructional process that have accompanied the adoption of the new curriculum. Basically, these data will be gathered by self-report, check list, and questionnaire techniques.

It should be noted that the instruments and procedures developed for observation and evaluation purposes could be readily adapted for use with other subjects and at other sites.

APPENDIX I

CSI ANNUAL REPORT

ANNUAL REPORT

The surge of legislative activity in the field of education during 1965 brought to the point of decision many problems which the Center for the Study of Instruction (CSI) and its principal staff had been studying. Of the Project on Instruction recommendations which had been widely discussed and actively disseminated by CSI staff and consultants, a number were directly reflected in federal programs—recommendations on the need for clarity in the roles of federal, state, and local authorities; on the need for an extensive program of research, experimentation, and innovation; on educating all children and youth; on establishing priorities for the school and other social agencies.

Without discounting its function as a disseminator and an agency for cooperative endeavors within the NEA, CSI had been tending toward programs with a focus on curriculum planning in selected schools. Federal legislation pointed up the need for a broader program of action which could relate CSI more closely to the activities of new groups forming under federal sponsorship so that the groundwork laid by the Project on Instruction might be more readily available to these groups and so that the recommendations made might be studied in action.

Provision of a $60,378 planning grant by the U.S. Office of Education for the development of a long-range effort to help schools adapt and use theories of rational planning of curriculum and instruction was the first step in the crystallization of a new role for CSI. Another was the formation of the Advisory Committee, which has helped immeasurably in indicating complementary programs appropriate to CSI's role and function in American education.

Still in its early planning stages, the program in which CSI is engaged is dedicated to the precept that orderly planning on a theoretical base is an ingredient many new school programs will lack and which we may be able to demonstrate and supply. The activities in the course of the year which have fed into our own program development are reported in greater detail in the following pages and in other places in this appendix. They fall generally into the pattern of reports on field work, activities of the consultant team network, publications, and program design. Also, a financial report is included

If the experience of an eventful year could be compressed into a single statement, it would be that the demand of events pressing for decision upon research and education has been the most powerful determinant in all of our programs. It is an opportunity for service to a broad community we hail; it now remains to consolidate our planning and secure the financial base from which we can proceed.

Ole Sand

Ole Sand
Director

PART ONE

FIELD WORK

The very fact of CSI's existence within the NEA requires that a certain portion of its program be devoted to field work with groups interested in curriculum reform and new instructional methods. We can never lose sight of the important function of dissemination of information among the NEA constituency, even though we are currently concentrating on action programs in depth. The function of dissemination, however, can become all-encompassing unless some priorities are set.

It has been for some time a CSI policy to screen requests for field engagements and consultancies carefully and to select from among the many requests groups who have commitment to action instead of a need for a person or persons to fill a slot on a program. The following report is a resume of some of the major consultancies and activities assumed by the staff.

During the past year, the director was named a consultant to the Midwest Team--USOE National Program of Educational Laboratories and served as consultant to Title III, PACE. He also accepted appointments to the following groups: the Advisory Committee of NAEB's National Project for the Improvement of Televised Instruction; the Project Policy Committee of the

Music Educators National Conference Contemporary Music Project; the Advisory Committee of the University Council for Educational Administration's Articulated Media Project; the National Commission on Industrial Arts Education; and the ASCD Board of Directors (member-at-large).

The associate director continues to coordinate the annual meeting of the University Personnel Investigating Team Teaching, now called Investigators of School Organization. The program specialist served during this year on an advisory group working with the staff of the Eastern Educational Network to design a series of television programs for teachers which will be concerned with instructional innovations. The USOE project coordinator serves on the National Advisory Board of the National Center for School and College Television.

All of the above assignments bear a direct relationship to the CSI program and offer opportunities for contacts with other organizations for mutual benefit.

Among the groups the director has addressed during this year are: National Catholic Educational Association, Music Educators National Conference, National Association of State Boards of Education, California School Boards Association, Association for Supervision and Curriculum Development, and the Board of Education and central office staff of the Los

Angeles City School Districts.

The associate director gave a general session address before the Second International Curriculum Conference held in Toronto, spoke to a large-group meeting at the annual convention of the American Association of School Administrators, and presented a paper at the Department of Elementary School Principals convention.

CSI staff coordinated the program on "New Dynamics in the School Curriculum" at the NEA Convention in July, 1965 and conducted programs at the NEA Regional Conferences on Instruction in Spokane and Washington, D. C. The associate director was a visiting professor at the University of New Hampshire last summer. He conducted a three-week workshop for teachers, administrators, and school board members. The director was a visiting professor during the 1965 summer session in the Graduate School of Education at Harvard University. The director and associate director served as consultants to the Virgin Islands Department of Education in September and November. In March, workshops were conducted on every island of the State of Hawaii at the request of the Hawaii Education Association, the State Department of Education, and private schools of the islands.

The research associate presented papers at the annual meetings of AERA and DESP. In addition, CSI and its consultant team leaders conducted a five-day seminar at the 1966 ASCD meeting.

A resume is given on the following page of the kinds of requests CSI staff accepted and the number of requests it was necessary to reject.

Resume of Staff Field Work

June 1, 1965 - April 30, 1966

CATEGORY	STAFF MEMBER AND NUMBER OF ASSIGNMENTS					
	Sand	McClure	Thompson	Wilson	Myers	Total
A) Professional Associations and Scholarly Groups	16	14	5	2	8	45
B) Lay Groups	4	1	0	0	0	5
C) School Systems and/or Consortia	9	13	3	3	2	30
D) Colleges and Universities	9	4	2	0	0	15
E) Federal Government and Foundations	12	3	6	1	1	23
F) CSI Consultant Teams	3	8	2	0	0	13
G) International	3	3	1	1	1	9
H) Special Projects	8	4	4	2	2	20
I) CSI-NEA	11	6	4	3	2	26
TOTAL	75	56	27	12	16	186
Field Requests Declined	185	34	5	12	10	246

PART TWO

CONSULTANT TEAMS

CSI's consultant teams have been organized for three years. Today, these teams are capable of providing schools and other institutions with an in-depth resource of competency in curriculum and instruction. This year, while the roster was growing from 24 to 60, some changes have been made—changes that reflect new directions for CSI as well as changes that are built on the past.

The Original Teams

In the fall of 1963, when CSI came into being, the Fund for the Advancement of Education provided financial support enabling the Center to:

- --produce two sound-and-color filmstrips about the Project on Instruction;
- --publish an additional one-half million copies of the Report summary, which originally appeared in the NEA Journal;
- --publish a study guide - From Bookshelves to Action;
- --establish a nationwide network of consultant teams.

Twelve small regional teams were established. Leaders of these teams held their first meeting in January, 1964. By spring, consultants were working with school and college faculties, administrators, supervisors, and laymen to inform them of the Project Report. Many more requests than could possibly be met were received. Until May, 1965, honoraria for the consultants came from grant funds with the school systems or other agencies assuming only the expenses. As grant funds expired, consultant team leaders met again in May of 1965 to reassess their experience and capabilities. They decided to continue the literacy aspect of their efforts and, at the same time, seek new frontiers for their energies. After this meeting, leaders and members of consultant teams continued their work in informing school people and others about the Report and began to define new goals and programs.

The Planning Year—1965-66

A major step toward defining a new role for CSI and the consultant network was taken in October, 1965, at the first meeting of CSI's Advisory Committee. Out of that meeting evolved a three-year Prospectus which included programs with great implications for the future of the teams.

Consultant teams sought in the past year to determine how their collective talents could best be directed in the future. Some have decided to work with selected school systems in programs of self-study. Others plan to consult with consortia of school systems on either a local or regional basis. One team is concerned that there be a continuing examination and analysis in print of the curriculum reform movement. Another wants to create a sub-network of consultants who, by their association with each other, would improve their individual consulting work.

The leaders of the seven teams met in Washington in January, 1966 to discuss their programs, to review the new CSI Prospectus, and to plan a series of seminars for the annual meeting in San Francisco of the Association for Supervision and Curriculum Development. CSI plans to bring the team leaders together again in the summer of 1966.

The budget for the teams this year has been a lean one, providing only a few hundred dollars for meetings and secretarial help. Some team programs have been enriched, however, by financial cooperation with other institutions.

While the roster of consultants more than doubled, the number of teams has declined from twelve to seven in an adjustment to changing schedules and work-loads of team leaders. Members are drawn from public and private schools, colleges and universities, and professional associations. They are teachers, researchers, administrators, and project directors.

The future program plans of each team and a report of their work from June, 1965 to April, 1966 are presented in more detail in the following section.

Team Activities

This description of consultant activities is based upon the written reports of team leaders and information from CSI staff members who attended their meetings.

The common thread in all the reports of team leaders is the accomplishment of each team in disseminating information about the Report of the Project on Instruction. Equally important is the diversity in goals of the various teams. The network of teams embodies several models of change in organization and programs. Some serve as catalysts to get people inquiring into new and better ways to build programs. Others view information-giving as an essential component of consulting, while some teams strive to assist practitioners to develop rationales for dealing with their problems.

CSI-New England Team

Robert H. Anderson - Leader	Patricia Ellis
Joseph Cronin - Acting Leader	Everett Landin
M. Virginia Biggy	Peter F. Neumeyer
Alan Blackmer	William C. Wolf, Jr.

Three priorities were set for the New England Team at their November 15 Harvard meeting. The three goals, suggestions for activities, and team members responsible for the activities are:

Helping college people to be better informed and more useful in their consultant activities and teaching (Miss Biggy)

- --by informing them of the NEA Project Report and the work of CSI
- --by calling a conference of professors of education in the New England states in order to bring the resources of the team to bear on this activity and get them talking with each other

Relating the competencies of the members of this team to new institutions and associations that have a legal responsibility for education in New England (Mr. Anderson, Miss Ellis, and Mr. Cronin)

- --by informing state departments of education and state associations affiliated with NEA of the existence of the team and offering its services
- --by serving as a "conscience" of New England in assisting regional structures (such as the regional laboratories) to evolve and gain force

Helping some of the less privileged and less financially secure school districts to improve their programs (Mr. Anderson and all team members)

- --by selecting a school system from the Merrimack Valley group and saturating it with service until it becomes, in effect, a "lighthouse project."

During the period covered by this report, Mr. Anderson has been on sabbatical leave, and Mr. Cronin has served as Acting Leader. Much of the team effort was directed toward consultations and discussions with members of groups listed above.

The New England team and CSI staff share a strong interest in the work of Miss Ellis and the Massachusetts Teachers Association (MTA), which is one of the few state associations initiating a program to improve curriculum and instruction. To encourage MTA's work in these areas, CSI's staff met with Miss Ellis, and Mr. Wolf has assisted her in preparing a proposal for funds to support MTA's program. The MTA this year sponsored two instructional conferences. The first dealt with urban school problems and the second with in-service education. Members of the New England team assisted Miss Ellis in organizing and conducting the conferences.

CSI-Pennsylvania Team

J. Steele Gow, Jr. - Leader
Donald Carroll, Jr.
Shirley Davidson
N. Dean Evans
Philip E. McPherson
John M. Mickelson
Mary L. Molyneaux
J. William Moore
Robert Scanlon
Thomas B. Stone

The Pennsylvania team discussed its program at a meeting on February 5 in Harrisburg. Before that, Mr. Gow, others from the team, and the CSI staff conferred about a project included in the CSI Prospectus. The project, called Action Model Two, is an attempt to create a model of educational change at the state level by developing a working relationship with the Department of Public Instruction and its galaxy of related universities, liberal arts colleges, community colleges, teachers colleges, state education associations, and affiliated school systems.

While specific tasks remain to be developed, the major purpose of the model is to establish ways for CSI to muster its national resources to help meet educational needs in Pennsylvania. In addition, the model will test the extent to which CSI's material and human resources can be brought to bear at different levels of the educational decision-making process and will determine to what extent CSI can become a catalyst for educational improvement on a broader scale.

A preliminary statement of objectives is completed. Mr. Gow and other team members will review this statement with the Superintendent of Public Instruction in Pennsylvania to decide next steps.

CSI-New York Team

Dorothy M. Fraser - Leader
Arthur T. Allen
Arno A. Bellack
Henry M. Brickell
Ronald Doll
Glen Heathers
Bruce Joyce
Esin Kaya
James Moore
Claire Ann Moshy
Robert O'Kane

Meeting several times in the past academic year, the New York team has probably discussed more thoroughly than any other team what it wants to accomplish and how its contributions will be made. A proposed program for 1966-67 was developed by a subcommittee and adopted at a team meeting on February 24.

Early in its deliberations, the team determined that it could make a more significant impact on educational improvement in the New York area by selecting activities which eventually could be disseminated to other groups.

A series of conferences has been planned for next year. Invited to the conferences will be representatives of professional associations, lay groups, scholarly societies, schools, and colleges. In addition to achieving the purpose indicated by the topic selected for the conference, it is anticipated that the participants will initiate similar conferences for their colleagues.

Invitational conferences, to be held at Fairleigh Dickinson University, Rutgers University, and in the Long Island area, will focus on such topics as school organization, establishing priorities for the school, determining appropriate roles of various educational agencies, and the promotion of research.

If CSI receives additional financial support for teams, the New York allocation will be used for reporting the conferences and for preparation of publications based on the proceedings.

The team, the New York State Department of Education, and Manhattanville College this year co-sponsored a Seminar on

Teaching series for local school people. In the five meetings, leading researchers described the methodologies they have used in their studies of teaching. By presenting several perceptions of what teaching is, it was hoped that participants' views of the teaching act would be enlarged.

CSI-South-Central Team (Formerly: Tennessee-Kentucky-Ohio)

Richard I. Miller - Leader	R. E. Michael
Mort M. Glosser	Hollis A. Moore
Egon Guba	J. Robert Ogletree
Claude E. Fike	Karl Openshaw
Bernard Fitzgerald	James R. Squire

At a planning meeting on December 28, the team determined these interests:

--Continuing a literacy campaign about the Project on Instruction with selected decision-making groups.

--Serving as a "conscience" to those responsible for expenditure of Title I funds.

--Assisting in the planning and setting up of Research and Development Centers.

--Identifying lighthouse school systems in their region for CSI.

--Assisting in an in-service education program for teachers.

--Beginning an "idea bank" for a proposed National Institute for Educational Innovation.

An ordering of these priorities will be the function of the team's spring meeting as well as determining their future programs. Additional new members from adjacent northern states have been added to this team, and, if CSI is able to complete a regional network, they will join an expanded Great Lakes Team.

CSI-Great Lakes Team (Formerly: Michigan)

Marion Cranmore - Leader	Rose Lammel (on leave
Charles Blackman	during the 1965-66
Wendell M. Hough, Jr.	academic year.)

During the past two years, in addition to an active statewide literacy program, individual members of the Great Lakes Team helped to create a position for instructional improvement in the Michigan Education Association structure. In July this position will be filled by Mr. Karl Ohlendorf, who has accepted an appointment as Assistant Executive Secretary for Curriculum and Instruction. It is anticipated that he will play an important role in the future of this team.

During this year, members of the team met with CSI's staff and with educational leaders around the state to discuss their future programs and what their contribution could be in the future. It seems likely that next year their activities will focus on helping local affiliates of the MEA build stronger programs for the improvement of curriculum and instruction in the schools of Michigan.

CSI-California-North Team

Norman J. Boyan - Leader	Douglas Johnson
G. W. Ford	I. James Quillen
Margaret Gill	G. Wesley Sowards
William J. Iverson	Hilda Taba

Formerly the team worked directly with affiliates of the California Teachers Association, assisting them to develop better educational programs. Two years ago this team's predecessor, the Stanford Consultant Team, and the California Association of School Administrators sponsored a meeting of school superintendents which focused on the Report of the Project. Since that time, a number of community conferences on education have been held throughout the state as an outgrowth of that meeting.

Two planning sessions have been held by this team. Like the other groups, the CSI-California-North Team attempted to clarify what its future activities would be. Since this clarification process occurred during the time CSI itself was making similar decisions, it has not been an easy task.

Tentatively, the team decided to build a network of members in the northern California area, drawn from California state college personnel. These professors often consult with school systems and other groups, and the California-North Team believes their work will be strengthened by affiliation with a regional and national group.

This year the team conducted an informal survey of educational needs in the Delano Elementary School District in Kern County, California. Subsequently, a weekend workshop for about one-third of the Delano faculty was staged. Certain team members will continue the work begun at the conference. Interestingly, the funds for this consultation are being provided through the Delano District's Title I allocation.

CSI-California-South Team

John I. Goodlad - Leader
Robert Brackenbury
Gus Dallis
William C. Hartshorn
Virgil Howes
Helen James
Frances Klein
Robert Keuscher
Jimmy E. Nations
Louise L. Tyler

In the past this team's predecessor, the UCLA team, served as a "sounding board" for proposed CSI projects. In their planning sessions for future programs, two decisions have been reached:

- --They will work with selected school systems that are a part of the UCLA League of Cooperating Schools. This program, hopefully, will be mutually beneficial to the League and to CSI.
- --They will assist CSI in appraising new developments and in disseminating value judgments about educational innovations. To achieve this goal, they will prepare a series of articles that describe and analyze current projects or innovations.

CSI Consultant Teams - Next Steps

CSI began this year with three jobs related to its consultant teams: assist them to inform others about the Report of the Project on Instruction, provide members with current thinking about CSI's future as a base on which they could build their regional programs, and increase the number of team members and the range of expertise represented to assure sufficient coverage of new programs.

The previous section discusses our success in achieving these objectives. Some teams were able to decide rather definitively what their future program would be within the framework provided by CSI's Prospectus. Others indicated a belief that CSI should be more directive about its intent for team programs.

A number of difficult questions remain only partially answered after this planning year:

> Why should an intermediate agency exist when school systems and others can go directly to an individual consultant?
>
> Are teams really teams or are they independent entrepreneurs whose names happen to be listed in a booklet?
>
> What is the most effective relationship that can be built between the teams and the USOE project, "Studies in Rational Planning of Curriculum and Instruction," and other CSI programs?

What happens when a consultant finds himself at odds with a CSI statement or program?

If the network is to be completed, what competencies should be included in the membership of new teams? How fast shall we move to add new teams?

The answer to the question, "What is the appropriate role of CSI consultant teams?" is beginning to emerge, as shown in the several reports in the previous section. Much remains to be done.

The Prospectus provides the framework in which some of these questions can be answered. Getting at the answers is complicated by the uncertainty of future resources. Obviously, if the situation remains as it did during 1965-66—that is, the Center providing a few hundred dollars for "housekeeping" details—the answer will be quite different than if larger amounts become available.

Teams were resourceful in acquiring financial cooperation from other institutions in funding some programs. Some highly significant projects have or will come about because of such cooperation. No one knows, though, how long teams will continue to be interested in an operation as meagerly financed as this one has been this year.

CSI has demonstrated its ability to pull together and hold an outstanding "talent pool." As the Prospectus clearly points out, there is a real need for assistance from the network of teams in many of the proposed CSI programs—particularly in the Studies of Rational Planning of Curriculum and Instruction[1] which require direct consultations to the staff and to the proposed school sites. The Pennsylvania State Program[2] also will require the help of the consultant teams. Particularly essential is a strong organization of consultant teams willing and able to make things happen—ready to initiate and assist others in curriculum reform as it is visualized in the opening pages of the Prospectus.

The future of a potentially strong program will depend on the ability of the staff to provide freedom and direction for the teams, the commitment of team members to join in the work of CSI, and the response from those we are attempting to assist.

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[1] Action Model One in the Prospectus.

[2] Action Model Two in the Prospectus.

Recapitulation of Budgets for Project on Instruction and Center for the Study of Instruction

YEAR	**SOURCE**	
	NEA	**OTHER**
1959-60 (POI)	$ 11,660	
1960-61 (POI)	66,819	
1961-62 (POI)	108,984	
1962-63 (POI)	138,247	
1963-64 (POI and CSI)	118,244	75,000 (Ford)
1964-65 (POI and CSI)	118,148	
1965-66 (CSI)	90,700	60,378 (USOE)
1966-67 (CSI) (Requested)	95,258	
Totals	$748,060	$135,378

TOTAL 1959-1967 $883,438

APPENDIX J

THE CONSULTANT TEAM NETWORK

National Education Association

Center for the Study of Instruction

THE CONSULTANT TEAM NETWORK

As reported in CSI's 1966 Annual Report to its Advisory Committee, the consultant teams have spent a year in transition—primarily from giving information and helping schools and other agencies use the recommendations of the NEA Project on Instruction to the development of team programs that encompass a wider range of activities.

At meetings of the seven consultant teams, at CSI staff meetings, during discussions with friends of CSI, and at the Advisory Committee meeting, a new and sharper role for consultant teams was identified. Three kinds of programs for each team have been designated: (1) information services, (2) CSI projects, and (3) special team projects.

The "baseball" on the next page highlights the total program for consultant teams.

CSI CONSULTANT TEAMS
ACTION PROGRAMS

INFORMATION SERVICES

1. Curriculum reform movement, including NEA Project on Instruction Report and CSI projects
2. Utilization—including orientation of additional consultants

CSI PROJECTS

1. Studies in the Rational Planning of Curriculum and Instruction: Local School Systems (Action Model One of the CSI Prospectus)
    a. Some team members working at the institutional level whose interest and competence are related to the conceptual scheme defined in the Project on Instruction and in the proposal for these studies
    b. Some team members working at the instructional level using a variety of teaching and learning models
2. Other projects such as Action Model Two of the Prospectus—Studies in the Rational Planning of Curriculum and Instruction: State School Systems

SPECIAL TEAM PROJECTS

1. Seminars and conferences
2. Publications
3. Work with selected school systems other than those in action models
4. Other

Team Information Services

Despite intensive efforts by the staff, consultant teams, and others, it is evident that much remains to be done in disseminating the Report of the Project on Instruction. In regions where teams operate, the large numbers of people to be served prevent most school systems from having direct access to the services of a team. Obviously, in regions where there is no team—and this cuts a wide swath between the Mississippi River and the West Coast—contact with the Report has depended on the field work of the CSI core staff. Dissemination efforts in this respect have been effective but necessarily scattered.

Members who have been with the teams for some time are, for the most part, willing to continue the information campaign but would like to decrease their efforts in this direction. Nevertheless, requests for field services grow. One way to maintain and increase dissemination of Project materials is to add young members to the teams, thus enriching CSI's resources in the field and offering opportunities to young professionals to be associated with our work. Induction of these new members should focus primarily on those who are willing to assume the burden of traveling and speaking in order to accomplish the dissemination job.

Even with a greater number of expanded teams, we recognize that it will never be possible for CSI to provide information services across the country through use of personnel alone. One way to supplement the additional resource people mentioned above is to expand their range with filmed programs about recommendations in the Project Report and other facets of the curriculum reform movement. By producing and providing such programs to ETV stations, team members can help local educators follow up these programs. The combination should provide a sustained and effective dissemination vehicle.

CSI Projects

Two CSI projects require considerable help from consultant teams—Action Models One and Two—Studies in the Rational Planning of Curriculum and Instruction: Local and State School Systems.

In Action Model One, for which a Proposal has been submitted to the U. S. Office of Education for three-year program support, two kinds of help are needed. At the institutional level, we want to draw on members whose competence and interest fall into the conceptual scheme designated in the Project on Instruction Report and in the Proposal for this study. A second kind of help is required at the instructional level. Here we envision calling on people with varying approaches to studies of teaching and learning.

A second CSI project, which will call on the combined efforts of the Pennsylvania Team and possibly other teams on the eastern seaboard, is called Action Model Two. The goals for this project are similar to those in Action Model One except that focus will be at the state level.

Here, we are not as clear what competencies will be required until Steele Gow, members of his team, and CSI staff state more clearly the specific activities for the project.

Special Team Projects

Several teams have, during the past year, developed innovative and significant projects on their own. The Annual Report describes these projects but does not adequately tell of the strong commitment of some teams to these new programs. Some believe that the team organization provides a unique framework in which new and important programs can be initiated and carried out. We anticipate that special projects will vary greatly among the teams and that their scope and impact will increase as funding and resources grow larger.

Summary

CSI has demonstrated its capability of pulling together this outstanding "talent pool." Seven regional teams with sixty members are presently committed to work with the Center. We, in turn, provide a coherent framework in which they operate. We can build from the strength of our past experience with these teams and from the existing network by expanding the teams in several ways. This requires the establishment of five teams in the following regions: Southeast, Rocky Mountain States, South Central, North Central, and the Pacific Northwest. The roster of every team should be expanded to include general curriculum specialists, representatives from the various disciplines, and facilitators of the change process or "educational engineers."

The support CSI is requesting from foundations for the teams is for communication and coordination of the existing teams and for initiating new teams.

APPENDIX K

OUTLINE OF PROJECTED PUBLICATION

OUTLINE OF PROJECTED PUBLICATION

Title: Essays on the Rational Planning of Curriculum and Instruction

Editor: Donald A. Myers

Chapter I
The Curriculum . . . . John I. Goodlad
Discusses the reform movement since World War II; indicating the influencing factors and forces; showing the characteristics of the changing curriculum; offering, finally, a critique of the assets and liabilities and indicating the continuing issues and problems.

Chapter II
Toward Taking the Fun Out of Building a Theory of Instruction . . . . Robert Travers
Indicates the characteristics of a theory of instruction, discusses independent and dependent variables, and proposes steps for the future.

Chapter III
Creating a Productive Dialogue: Research, Discussion, and Rationale . . . . Ole Sand and Donald Myers
Considering the state of the curriculum reform and the general lack of a theoretical approach to curricular problems, the continuing dialogue in education must include a study of the following: (1) philosophy, (2) objectives, (3) change, (4) overall design.

Chapter IV
Guidelines for Curriculum, School, and Classroom Organization . . . . Glen Heathers
Suggests educational aims and the themes of proposed organizational changes; offers general guidelines for deciding about adopting organizational changes; and proposes an approach for setting up guidelines for local change programs.

Chapter V
Guidelines to Help Schools Formulate and Validate Objectives . . . . Robert L. Brackenbury
The need for explicitly stated objectives is documented. Eight specific tasks that need to be accomplished by an institution embarking upon such an undertaking are suggested.

Chapter VI
An Examination of Potential Change Roles . . . . David L. Clark and Egon G. Guba
Proposes a classification schema of processes related to and necessary for change in education and attempt to analyze extent and projected change roles in education. Seventeen specific recommendations are made.

Chapter VII
Two Change Strategies for Local School Systems . . . . Henry M. Brickell
Two change strategies for local school systems are proposed as specific vehicles for planned change in instruction. The ingredients of an invention setting are presented, as well as the conditions necessary for local adoption.

The monograph will be divided into three parts: the state of the curriculum reform movement and the state of curriculum theory, chapters I and II; general guidelines and the need for specific objectives, chapters IV and V; an overall process of change schema and local change strategies, chapters VI and VII.

APPENDIX L

LETTER TO INTERESTED SCHOOLS ABOUT CSI PROJECT

June 1, 1966

TO: Those who have inquired about the CSI project, "Innovation in Planning School Curricula."

FROM: Elizabeth C. Wilson
Project Coordinator

This memo is in the nature of a progress report on the status of our USOE research grant. You may remember that we said we would keep you in touch with this project as it developed. We expect to know this summer whether the program will be funded.

As you can see by the enclosed abstract, the project has been somewhat modified since its original conception. We invite your attention, for example, to the fact that:

1. The name of the program now is "Studies in the Rational Planning of Curriculum and Instruction" - a more accurate label for our plans;
2. The number of pilot school systems has decreased, but a group of observers from selected schools and school systems has been added;
3. CSI consultant teams have a more active role.

The more active role for teams is described in the second enclosure—a summary of our third technical progress report to USOE.

A third enclosure includes a map and roster of the CSI Consultant Teams. If a team exists in your region, perhaps you would want to initiate discussions with the leader about possible ways the team could work with you in this interim period. The introduction to the roster outlines our procedure for establishing a working relationship with a team.

The enclosed technical progress report also states that a publication is growing out of a seminar held last October. We will let you know about that publication when it comes off the press. Meanwhile, we are attaching descriptions of two new CSI publications (Enclosure 4).

The program we hope to undertake is complex and difficult. We are most anxious to keep in contact with our friends and supporters and, therefore, will take the liberty of sending you occasional reports of our progress.

Thank you for your continued interest.

ECW:mo
Enclosures - 4

APPENDIX M

NEWS RELEASE

NEWS From the National Education Association
1201 16th St., N. W., Washington, D. C. 20036 - 202-AD4-4868
Division of Press, Radio, and Television Relations
New York Office, LT 1-2360, Frederick A. Jacobi, Manager: Los Angeles Office, 478-1277, Henry S. Noerdlinger, Manager.

For Further Information:
Fred Stoffel or Tom Hawkins

FOR IMMEDIATE RELEASE

NEA Instructional Center To Help Schools Plan and Carry Out Curriculum Change

WASHINGTON, D.C.--The National Education Association's Center for the Study of Instruction (CSI) today announced a new project in planning curricula for the nation's schools with the 1970's and the remainder of the 1960's in mind.

To start the new program, the U. S. Office of Education is providing a $60,000 grant. The project, called "Innovation in Planning School Curricula," thus is a continuation of the Center's earlier and successful "Schools for the Sixties" program.

The new venture will concentrate on the day-to-day problems of planning and carrying out constructive curriculum changes in actual situations from the pre-school through the junior college level. It is the first phase of a long-range effort to help schools adapt and use theories of rational curriculum planning, CSI director Ole Sand stated.

Steps to be taken during this coming year include:

- Development of comprehensive theories of institutional planning for change
- Exploration of practical ways of translating systematic theory into action in classrooms

- Investigation of a variety of school situations to serve as possible sites for future school-based testing and demonstration centers

Joining the staff of the CSI to launch the project are two well-known educators experienced in the practical problems of organizing curriculum change in the public schools. Elizabeth C. Wilson, Director of Curriculum Development, Montgomery County, Md., will serve as Project Coordinator and is being loaned to the CSI by the Montgomery County Public Schools for the coming year. Donald A. Myers, formerly Curriculum Director for the Riverview Garden Schools, St. Louis, Mo., is Research Associate for the project.

An important initial activity is a three-day seminar which will bring together a small group of leading theorists and school people in early October. Participants will analyze and discuss a series of background papers relating to curriculum design and the processes of curriculum change. The conference will also develop directions for the project and suggest promising school sites for future visits.

After the seminar, the CSI plans to summarize the proceedings of the conference and to publish the position papers as aids to the project planning and as guidelines for schools.

Later in the year, probably beginning in January, the CSI staff expects to visit a number of schools and school systems with differing problems, needs, and aspirations, such as a large suburban school system, a large city school system, an isolated school district with minimum local financing, a university-centered experimental school, and a school or school system highly traditional in character and unreceptive to change.

From staff visits to schools across the country will emerge five to ten sites for full scale development, study, implementation, and evaluation of rational curriculum planning.

# # #

10/4/65